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TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. John D. Fisher, E. Hallowell, J. E. Snodgrass, Jno. M. Harden, M. Morrison, J. Byrne, and Daniel Stahl.

Dr. John D. Fisher's paper reached us too late for the present number; it shall appear in our next.

Two Bibliographical Notices have been sent to us, but as the author has not favoured us with his name, they have necessarily been excluded.

The following works have been received:—

Boylston Prize Dissertations for the years 1836 and 1837. By Oliver Wendell Holmes, M. D., Fellow of the Massachusetts Medical Society, and Member of the Société Médicale D'Observation of Paris. Boston: Charles C. Little and James Brown, 1838. (From the author.)

Neue Untersuchungen über die organischen Elemente der thierischen Körper und deren Zusammensetzungen. Von G. R. Treviranus. Bremen, 1835. (From Dr. Von dem Busch.)

Annual Report of the Board of Trustees of the Massachusetts General Hospital for the year 1837. (From Dr. L. V. Bell.)

The Philadelphia Practice of Midwifery. By Charles D. Meigs, M. D., Lecturer on Midwifery and the diseases of Women and Children, Member of the American Philosophical Society, &c. With numerous engravings. Philadelphia, 1838. (From the author.)

Lectures on Lithotomy, delivered at the New York Hospital, December, 1837. By Alexander H. Stevens, M. D., Surgeon of the New York Hospital, &c. New York, Adlard and Saunders, 1838. (From the author.)

Observations on the comparative state of Medicine in France, England, and Germany, during a journey into these countries in the year 1835. By Dr. Adolph Muehry, Practising Physician and Surgeon in Hanover. Translated from the German by Edw. G. Davis, M. D., of Philadelphia. Philadelphia: A. Waldie, 1838. (From the translator.)

Researches on Emphysema of the Lungs. By M. Louis. Translated by T. Stewardson, jr., M. D., &c. (From the translator.)

Introductory Lecture delivered at the opening of the Session of the Medical College of the State of South Carolina, on the second Monday of November, 1837. By E. Geddings, M. D., Prof. of Pathology and Medical Jurisprudence, and Dean of the Faculty. Published by the Class. Charleston, 1838. (From the author.)

A Catalogue of the Officers and Students of the Louisville Medical Institute. Louisville, 1838. (From the Institute.)

Introductory Lecture delivered at the opening of the Session of the Medical College of South Carolina, on the second Monday in November, 1837. By Thomas Y. Simons, M. D., Dean of the Faculty. (Published by the Students.) Charleston, 1838. (From the author.)

The Final Report of the Committee of the Philadelphia Medical Society on the construction of Instruments and their mode of action, in the radical cure of Hernia; (from three years' observation;) accompanied by a collection of the practical facts contained in the preliminary report: with notes, illustrations, and additional cases of hernia, and diseases resembling hernia, also, illustrations of certain instruments, designed for the treatment of other diseases effecting [affecting] similar parts. By Heber Chase, M. D., &c. &c. Philadelphia, 1837. (From the author.)

Catalogue of the Students attending lectures in the Medical College of the State of South Carolina. Session, 1837. Charleston, 1838. (From Prof. Geddings and Dr. H. R. Frost.)

Popular Medicine; or Family Adviser; consisting of Outlines of Anatomy, Physiology, and Hygiene, with such hints on the practice of Physic, Surgery, and the diseases of women and children, as may prove useful in families, where regular physicians cannot be procured; being a companion and guide for intelligent principals of manufactories, plantations, and boarding-schools, heads of families, masters of vessels, missionaries, or travellers; and a useful sketch for young men about commencing the study of medicine. By REYNELL COATES, M. D., Fellow of the College of Physicians of Philadelphia, &c. &c. Philadelphia, 1838. Carey, Lea & Blanchard. (From the publishers.)

Transactions of the Medical Society of the State of New York, Vol. IV., Part 1. Albany, 1838. (From the society.)

The Pilgrim's Progress in Phrenology. Part 1. By UNCLE TOBY. New London, 1836. (From the author.)

Revue Médicale, October, November, December, 1837. (In exchange.)

Bulletin Général de Thérapeutique. October, November, December, 1836. (In exchange.)

Journal des Connaissances Médicales Pratiques et de Pharmacologie. August, September, October, November, December, 1837. (In exchange.)

Journal de Médecine et de Chirurgie pratiques. October, November, December, 1837. (In exchange.)

Gazette Médicale de Paris. October, November, December, 1837. (In exchange.)

Journal de Pharmacie, October, November, December, 1837. (In exchange.)

Journal des Connaissances Medico-Chirurgicales, November and December, 1837. (In exchange.)

Zeitschrift für die gesammte Medicin, &c. Herausgegeben von J. F. Dieffenbach, J. C. G. Fricke und F. W. Oppenheim. July to December, 1837. (In exchange.)

The British and Foreign Medical Review, or Quarterly Journal of Practical Medicine and Surgery, October, 1837. (In exchange.)

London Medical Gazette, December, 1837. (In exchange.)

Southern Medical and Surgical Journal, December, 1837, January, 1838. (In exchange.)

The Boston Medical and Surgical Journal. (In exchange.)

The Medical Examiner, Nos. 3, 4, 5 and 6. (In exchange.)

The Select Medical Library and Eclectic Journal of Medicine, for February, March and April, 1838. (In exchange.)

The Western Journal of the Medical and Physical Sciences: Edited and published quarterly by the Medical faculty of the Cincinnati College. October, November and December, 1837. (In exchange.)

The Transylvania Journal of Medicine and the Associate Sciences, October, November and December, 1837. (In exchange.)

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "CAREY, LEA & BLANCHARD, Philadelphia, for the *Editor of the American Journal of the Medical Sciences*." All letters on the *business* of the Journal to be addressed exclusively to the publishers.

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MEDICAL SCIENCES.

Art. I. *Account of a Case in which the Cæsarean Section, performed by Prof. Gibson, was a second time successful in saving both mother and child.* By George Fox, M. D.

Before entering into the details of the case about to be narrated, we have conceived it might be interesting to give a brief account of the previous labours of the patient, in which Dr. Meigs and myself attended.

The subject of the case, Mrs. R., is a native of Ireland; was born March 15th, 1809; is of small stature, not exceeding four and a half feet; is stated to have been a healthy child, till her second or third year, when she received an injury by a fall, after which she was unable to stand or walk for some years; subsequently she regained her strength, and was considered active. Upon examination we find the femur and tibia of each extremity very much curved, forming a considerable arch, convex anteriorly; at the lower part of the spine there is a large cavity, corresponding with the promontory of the sacrum internally; the bones of each upper extremity partake of the general form and disease. It is evident she has, in early life, laboured under rickets. She was married in May, 1830, and has been pregnant four times.

In the spring of 1831 I was requested to attend her in her approaching accouchement, and was accordingly summoned to see her on the 14th of the following June. In this labour the late Professor James, Drs. Hewson, Meigs, and Lukens attended in consultation; for a detailed account of which see the *North American Medical and*

Surgical Journal, for October 1831, p. 484; also Meigs's *Midwifery,* p. 322.

It was the unanimous opinion of the above named gentlemen, that the antero-posterior diameter did not exceed two inches, most probably was only one inch and three-quarters; and that there was laterally rather more space, particularly on the left.

After the most mature deliberation, cephalotomy was decided upon as the best means of delivering our patient; the cæsarean section was strongly urged, but its performance deemed inexpedient at that time. However, after cephalotomy had, in consultation, been determined upon, and Dr. Meigs consented to perform it, this gentleman again very carefully examined the patient, and called Dr. Lukens and myself to make another examination, which resulted in the conviction that the operation of cephalotomy, if not altogether incompetent to the delivery, would be attended with as much risk to the life of the mother as the cæsarean section; for it then appeared to us impossible for the cranium to be removed and the base brought through the superior strait, without the most violent exertions and great danger of lacerating the cervix uteri, vagina, &c.; and it was thought better to call our colleagues again together to reconsider the propriety of performing the cæsarean section, the child having been ascertained to be alive.

Accordingly we again met. Our first object was to ascertain whether or not the child was alive. Upon minute examination all fœtal and placental soufflé, in the uterine region, was found to have ceased; the child being consequently dead there was no longer any hesitation as to the propriety of cephalotomy, which was immediately performed. The difficulties were great, far exceeding our worst apprehensions; the instruments recommended for similar cases were all tried, but without any benefit. After great perseverance Dr. Meigs was enabled, with the common tooth forceps to accomplish the delivery, thirty-three hours having elapsed from the perforation of the head to the complete delivery of the child.

Our patient subsequently recovered without any untoward circumstance, and so rapidly, as to be permitted to go down stairs in three weeks from the day of her delivery.

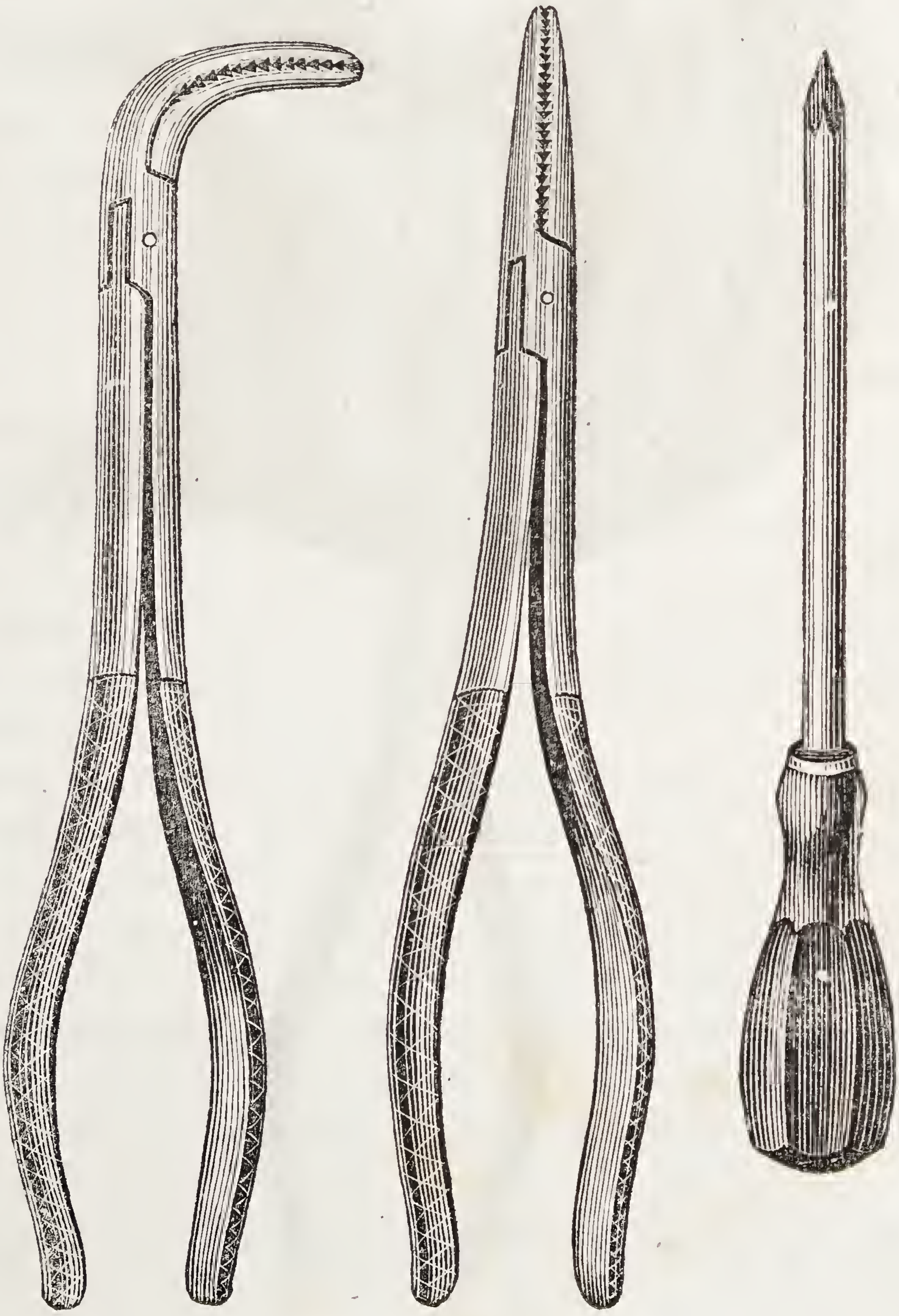
The opinion of all the gentlemen who had witnessed the extreme difficulties and dangers incurred by the mode adopted, was, that the cæsarean section would have been better and attended with no more, if as much, risk to the mother.

In the course of her second pregnancy, premature labour was advised, but not consented to. On the 23d of June, 1833, labour commenced, Dr. Meigs and myself attending her; the cæsarean section having been previously strongly urged, but perseveringly refused, the

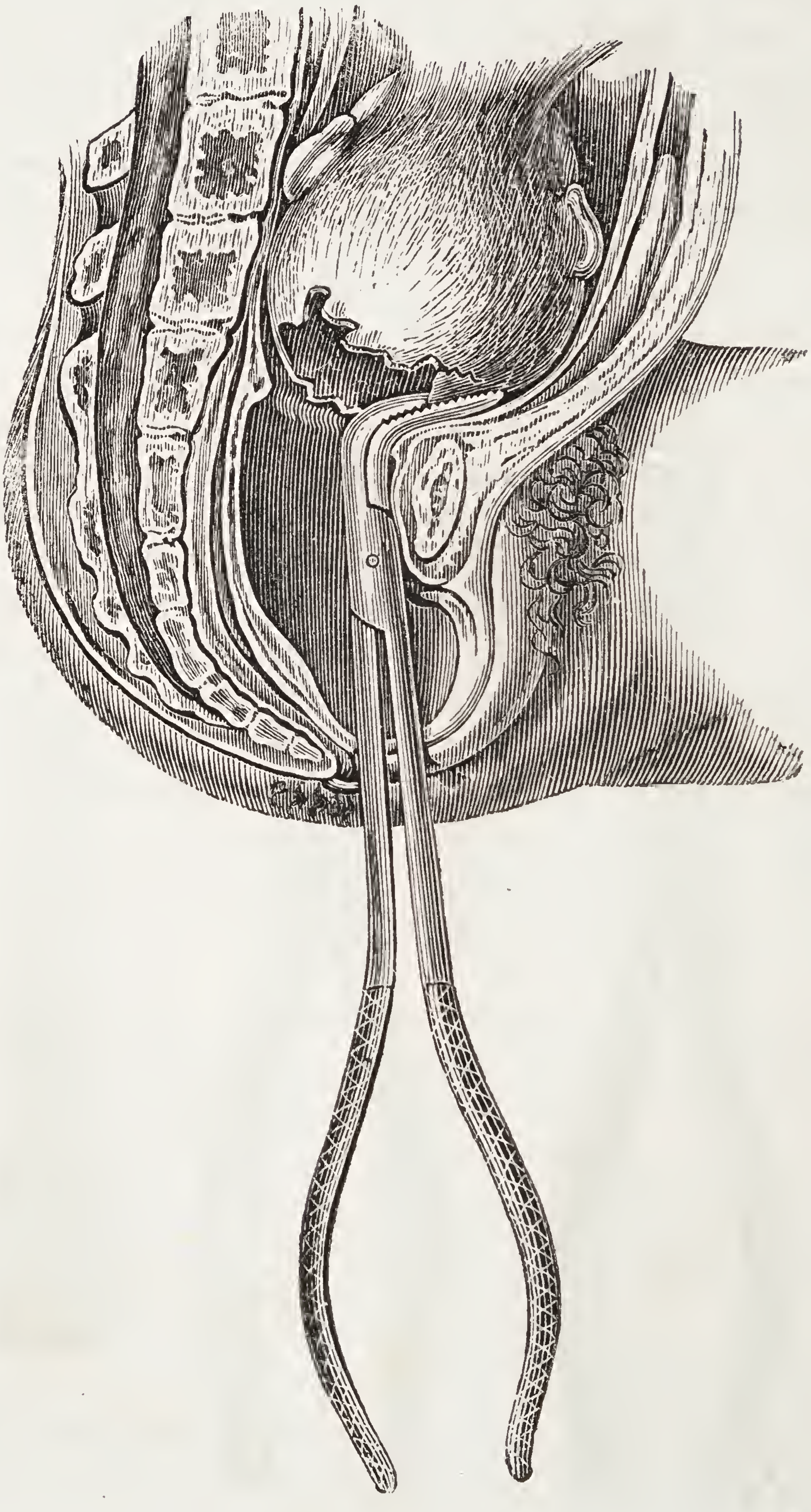
only alternative left, was a repetition of the former operation, cephalotomy; this being decided upon, and no good but much injury likely to result from delay, we were reluctantly compelled to destroy the child rather than increase the risk to the mother, by waiting until nature should have accomplished the same end.

The delivery, in this instance, was much more readily effected, mainly to be attributed to the instruments which Dr. Meigs had caused to be made for the purpose.

These instruments are two pliers or forceps, each eleven inches in length, and of the forms represented in the subjoined *cut.* In one of them, the mandibles, or beak, is straight, in the other it is curved or bent nearly at a right angle. The jaws are slightly serrated in order to hold firmly any body included within their gripe; their edges and those of the joints are rounded or bevelled, so as to avoid all the parts except such as are intended to be pinched, as may be seen in the *cut.*



They are of great strength, and may be used as extractors, or tire-têtes, without the least risk of wounding the mother, a charge to which all forms of the crotchet are justly obnoxious. They cannot wound the mother. With these powerful forceps we can seize, and break, and extract large portions of the fœtal cranium, with the greatest facility; even above a superior strait of only one inch and a half in diameter, an opening being previously made with the common perforator, or the drill or trocar, exhibited in the *cut*. A head can, therefore, be broken up and reduced to its smallest possible remainders



with these instruments, with which the fœtus can be afterwards eviscerated if needful, and safely extracted from the womb.

The principle of their construction is as follows:—If a pelvis be deformed so as to have only one inch and a half of antero-posterior diameter, a fœtal head of three and a half inches cannot engage in the strait, but must lie above it, and resting on the top of the symphisis pubis. If its right parietal bone, (e. g.) is towards the sacrum, the left will project beyond in front of the top of the pubis. Hence, as the crown of the head rests on the top of the symphisis, a straight forceps or pliers could not grasp or bite its horizontal portions, but it could seize all the vertical portions of bone which lie towards the mother's back. Whereas, a curved beak could not seize the vertical pieces, but could readily take hold of all the horizontal portions, as in the *cut* is well exhibited. The cut will also serve to evince the necessity of a curved beak for seizing all the portions that extend to the left and right of the centre of the strait. Dr. Meigs supposes that these instruments are capable, under all circumstances, of effecting every desirable result attainable by the sharp crotchet, and that the former may be superseded by the latter.

Our patient again recovered, so as to be able in a few weeks to resume her ordinary avocations.

In her third pregnancy, she was under the charge of other medical advisers; in this instance Professor Gibson performed the cæsarean operation, which terminated favourably to both mother and child; for an account of which see this Journal, Vol. XVI. p. 343, and Vol. XVII. p. 264, and Gibson's Surgery, fourth edition, Vol. II. p. 405.

Toward the latter end of August last, Mrs. R. called on me and stated she had nearly completed the seventh month of pregnancy, and was desirous that I should again attend her; this I agreed to, upon condition, that she would consent to the performance of any operation which should be deemed most advisable. Dr. Meigs kindly consented to attend with me.

Premature labour, in her then advanced state of pregnancy, we considered would be attended with as much difficulty, and much greater danger to the patient, than at the full period.

Under the impression that the cæsarean section would be most proper, we endeavoured to prepare her system for this operation, should it be concluded upon, by a regulated diet, such as would be least stimulating, attention to her bowels, &c.; accordingly for some weeks previous to labour, her diet was chiefly restricted to milk and farinaceous articles.

On Sunday, November 5th, 1837, I was sent for by Mrs. R. about

5 o'clock, A. M. On my way to her house I stopt for Dr. Meigs. We found her labouring under a good deal of mental excitement, with a pulse of 116; countenance anxious and pallid; and apparently in a much more unfavourable situation than in either her first or second accouchements. Her pains had commenced about three hours previous to calling upon us; they were slight, recurring at an interval of about ten minutes; upon an examination per vaginam, the os uteri was found pretty well dilated, swollen, and succulent, as in previous labours; the head presenting to the left side of the pelvis; the membranes had been ruptured. Upon inquiry we learned that on the evening of the Friday previous, there had been a considerable discharge of water from the vagina, which continued throughout the following day; but as it was unattended with pain, she had not thought it requisite to send for us: this discharge was not produced by any exertion on her part. After remaining with her some time, finding that her pains were not urgent, we concluded to meet at 9 o'clock, and invite Professors Gibson and Hodge to join us in consultation.

9 A. M. Met Drs. Meigs, Gibson, and Hodge. We found our patient much the same as when we left her, excepting that the pains were rather more urgent and frequent. Upon an examination of the case in all its bearings, we determined to advise the cæsarean section, as best under the circumstances. I accordingly stated to the patient our views of her case, and after some little hesitation obtained her consent to the performance of this operation; previous to which, upon an examination of the abdomen, we were struck with the complete antiversion of the uterus; the old cicatrix was dark-coloured, hard, and puckered, about five inches in extent; adhesion had apparently united the integuments and uterus for a space of four or five inches, from near the pubis up towards the umbilicus.

We now ascertained, by applying the ear to the uterine region, that the child was living. Our patient's bowels having been opened by an enema, and her bladder emptied, she was placed upon a table, protected by a mattrass, on her back, with her hips at the edge, and the operation immediately performed by Dr. Gibson, in the presence of Drs. Meigs, Hodge, Norris, C. Bell Gibson, and myself. Dr. Norris and myself making firm pressure upon the sides of the abdomen to prevent protrusion of the intestines, Dr. Gibson commenced by making his incision, with a scalpel, through the integuments, muscles, &c., extending from an inch and a half below the umbilicus, nearly down to the pubis, directly through the old cicatrix; the uterus was found connected with the integuments by strong adhesions, for a space of about four inches; the incision into this organ was made near the fun-

dus, and extended down five or six inches; that portion, which was adherent, was much attenuated, being scarcely one-fourth of an inch in thickness. To ascertain the extent of these adhesions, Dr. Gibson, with his scalpel, dissected up the integuments on one side, until a knuckle of intestine protruding, satisfied him of their extent, which might be about half an inch.

When the section of the uterus was completed, the placenta was seen immediately under the line of incision, and partially detached by the separation of the lips of the wound. Dr. Meigs, standing on the left of the patient, now introduced his left hand towards the right side of the womb, displacing the placenta no more than was necessary during the exploration, yet detaching a considerable portion of it, as it filled the wound in the organ; he first extricated the left foot and hand, which were found near each other; the breech soon followed, succeeded immediately by the shoulders, and lastly by the head, after a few moments of resistance, by the contracting edges of the cut, which grasped the neck of the child, and the hand of the operator, with great force. The placenta was soon after removed through the incision, and the cord tied and cut; the hemorrhage from the uterus was at first considerable, but ceased upon the contraction of that organ, after the removal of the child and placenta. The external wound was brought together by six sutures, (introduced from within outward,) and adhesive strips, and a compress placed over it; a broad band, to support the abdomen, was now applied around it; the pressure of its sides, to prevent protrusion of the intestines, was continued until the external wound was closed.

The child thus born, was a boy of good size, but in an extremely feeble state: some time elapsed before perfect respiration was established, but happily, the efforts of Dr. Meigs were completely successful, and all anxiety on its account ceased.

Our patient bore the operation well, scarcely murmuring; in fact, she says, she suffered but little more than with one labour pain, her pains usually being uncommonly severe. Her position was not altered, excepting that her lower limbs were now supported by another table. Her pulse immediately after the operation was 96, just before 112. She is enjoined to lie perfectly still, not on any account to move; to be permitted to take nothing but small portions of barley water; and in case there is much pain, a teaspoonful of the following: ℞. sulph. morphiæ, gr. ij.; aquæ, ℥i. M. Ft. sol.

Soon after the operation, Messrs. J. Forsyth Meigs and Skelton, arrived; these gentlemen assiduously devoted themselves to our patient during the first five days and nights, so that, had any unfavourable symptom appeared, we should have had immediate notice.

$1\frac{1}{2}$ P. M. Feels quite comfortable; after pains very slight; pulse 80.

4 P. M. Pulse 88; has taken one teaspoonful of morphia solution. —10 P. M. Met Dr. Meigs. Pulse 88; skin pleasant; gentle moisture; tongue clean and moist; some flatulence; not much soreness; after pains moderate; urine drawn off by the catheter, six ounces; directed sol. morphiæ to be given every three hours if there is much pain, and a small portion of lime water occasionally for the flatulence.

6th, $10\frac{1}{2}$ A. M. Met Drs. Meigs, Gibson and Hodge. Mrs. R. passed a restless, uneasy night; was unable to sleep, though not in pain; took a dose of morphiæ at $11\frac{1}{2}$ P. M., and another at 5 A. M., also lime water twice. Her pulse is 85 and soft; skin pleasant; slight distension of abdomen, without any increase of soreness; urine by catheter five ounces, of natural appearance.—$1\frac{1}{2}$ P. M. Symptoms all favourable; pulse 88.—4 P. M. Pulse 92.—$8\frac{1}{2}$ P. M. Met Dr. Meigs. Pulse 94; skin and tongue moist and pleasant; countenance good; no expression of anxiety; considerable tympanitis; complains much of flatulence; no after pains; lochia free and natural; urine by catheter ten ounces. At this time, a catheter was introduced into the rectum, which caused the discharge of a large quantity of gas, rendering her much easier, and completely relieving the tympanitis. Directed a tablespoonful of the following mixture to be given every two or three hours: ℞. bi. carb. potassæ ʒij.; sulph. morphiæ grss.; aquæ menthæ, p. ℥vj. m. ft. sol.

7th, 10 A. M. Met Drs. Meigs and Gibson. Our patient had a very good night; slept comfortably, without an opiate; pulse 78 and soft; countenance good; respiration natural; skin pleasant; tongue slightly furred, but moist; urine by catheter eight ounces.—4 P. M. Pulse 82; no pain or tenderness; has slept through the day; expresses herself as feeling comfortable.—$8\frac{1}{2}$ P. M. Pulse 84; no return of tympanitis since the introduction of the catheter into the rectum last evening; urine by catheter eight ounces; continue mixture.

8th, 10 A. M. Rested well all night; secretion of milk natural; the infant was put to the breast during the night; pulse 100; skin pleasant, moist; tongue slightly furred, moist; urine by catheter eight ounces; wound was examined without removing dressings, suppuration is commencing, there has been throughout a slight oozing of bloody serum; she is this morning removed to another bed.—2 P. M. Pulse 92; secretion of milk increased so much as to cause some uneasiness to her; breasts are directed to be well drawn.—$8\frac{1}{2}$ P. M. Pulse 92; breasts relieved by drawing; urine by catheter ten ounces.

9th, 10 A. M. Slept soundly all night; appears very comfortable; pulse 97; skin pleasant, moist; secretion of milk abundant, lochia

natural; urine by catheter eight ounces.—6 P. M. Pulse 96; skin moist; abdomen flaccid, free from all pain or tenderness; no flatulence; urine by catheter eight ounces; directed the mixture carb. potassæ to be omitted: she had taken it occasionally on account of flatulence, since the evening of the 6th; to-night, is permitted to take arrow root gruel; has been restricted to small portions of barley water until this time.

10th, 9 A. M. Slept comfortably; having some return of flatulence, took two doses of potash mixture in the course of the night; relished gruel; external organs were washed with weak wine and water, much to her relief; pulse 104; skin moist; urine by catheter eight ounces.—1 P. M. Pulse 100; wound dressed for the first time; it extends from half an inch of the pubis to one and a half inches of the umbilicus; adhesion has taken place at the upper and lower ends; discharge slight, bloody, dark coloured; at the upper end of the cicatrix from former operation, on the right side of the incision, it is slightly inflamed, of an erysipelatous appearance, and ulcerated, for the space of two inches; I removed a stitch from this point, which seemed to be a source of irritation, also one from the upper end; washed the parts and applied fresh adhesive strips, leaving a sufficient space for the free escape of pus; a piece of lint, spread with cerate, and bandages were then applied; she complained of no pain or fatigue. Bowels not having been moved since the operation, an enema of warm flax-seed mucilage is directed; breasts, which are somewhat troublesome, to be well drawn; the child would nurse, but from the mother's position it is difficult and fatiguing; consequently, we rarely put it to the breast, having from the first had a wet nurse for it.—6 P. M. Pulse 100; skin pleasant; no pain; all her symptoms are most favourable; urine by catheter ten ounces; enema not having operated, another to be administered.

11th, 9½ A. M. Slept well, but in consequence of some pain in the evening, caused by the enema (which operated freely), she took two doses of morphia solution; pulse 96; tongue less furred, moist; urine by catheter eight ounces; abundant secretion of milk; no unfavourable symptom; slight, dark coloured discharge from wound; fresh cerate applied; asks for increased diet; is to be allowed the soft part of six oysters and a biscuit, in addition to the gruel.—6 P. M. Pulse 96; urine by catheter six ounces.

12th, 10 A. M. Rested well; took one dose of morphia; pulse 98; skin pleasant; has passed water twice through the night, without the catheter; the wound looks well, healing; inflammation about the old cicatrix much diminished, I removed three more stitches, and

applied fresh adhesive strips to lower parts of it; diet, milk, eggs and oysters.

13th, 10 A. M. Pulse 96; no pain; skin natural; tongue clean; slept well; wound looks well; removed the last suture, and applied fresh dressings.

15th, 10 A. M. Has slept well for the two last nights; pulse 96, soft and pleasant; skin and tongue natural; countenance good; very cheerful; spirits throughout have been excellent. Wound looks well; adhesion perfect above and below; is filling up rapidly; inflammation of right edge subsided; suppuration moderate, lighter colour; lochial discharge has ceased. This morning, for the first time, she complains of her position, which has been altogether upon her back; upon examination, a small slough (size of a cent) is discovered upon the sacrum; inquiry had frequently been made upon this point, but the fear of being moved induced her to conceal the pain and soreness until this time; her position is now changed to the side, hips being protected by adhesive plaster; a poultice of bread and milk to be applied to slough; diet as before.—5½ P. M. Much more easy since change of position; pulse 92; has for the last two days suckled her infant.

17th, 10 A. M. Pulse 84; bowels were opened yesterday by an enema; slough separating, superficial, does not complain of it; wound looks healthy; suppuration slight.

25th. Has been very comfortable since last report; no pain or tenderness; pulse 88; wound nearly closed, a small opening merely remaining, about the top of the old cicatrix; the discharge from it very slight; bowels being confined, she is requested to take ol. ricini ℥j.; to-day is permitted to set up in the bed.

We have conceived it unnecessary to head each daily report, "Met Drs. Meigs and Gibson," we having continued to meet regularly during the first week, after which time, Dr. Gibson saw her occasionally, during the progress of the case, as convenience or inclination dictated; Dr. Meigs continued in regular attendance some time longer.

December 26th. Mrs. R. has continued perfectly well; soon after date of last report was permitted to leave her bed; the slough on the back soon separated and caused but little inconvenience; the incision in the abdomen has healed, with the exception of a small fistulous opening, which is occasionally touched with lunar caustic; her diet has for some time past been generous.

February 21st, 1838. The fistulous opening heretofore noticed, continued a source of annoyance till the 10th inst., since which time it has been entirely closed; the cicatrix is now complete, and looks healthy.

Remarks.—Our patient had a better "getting up" than many

females after an ordinary accouchement; her sufferings after the operation, were slight indeed; in twenty days from the day of its performance, she sat up; and for some days previous, constantly nursed her infant. The adhesions connecting the uterus and abdominal parietes in front, were so extensive, as almost to have permitted the performance of the operation, without necessarily opening the peritoneal sac; very much diminishing its dangers. It may be worthy of notice, that nine months subsequent to the former operation, during lactation, the menstrual discharge returned, healthy and natural in every respect. During the progress of the case, the patient was visited by many of our medical friends.

The infant has grown finely, not having had an hour's sickness since birth.

Philadelphia, February 22nd, 1838.

Art. II. *On some Mechanical Functions of Areolar Tissues. Containing the co-ordination of the Diffusion Laws of Professor Graham and the Experiments of Dr. J. K. Mitchell; and the General Law of Equilibrium.* By John W. Draper, M. D., Professor of Chemistry and Physiology in Hampden Sydney College, Virginia.

1. Of all bodies, those alone are capable of exhibiting the phenomena of life, which consist of an areolar structure. Identity of chemical constitution does not appear to be essential, yet it is only a limited number out of the long list of chemical elements, that are capable of organization; these, if left alone to satisfy the conditions of their affinities undisturbed, would most commonly give rise to the production of water, ammonia, and carbonic acid. Life, therefore, in this point of view, has no other action than to disturb the play of these affinities, and force the elementary atoms into other forms of combination; it depends upon the success of this action, whether a living or inorganic mass shall result. A living body is endued with a peculiarity of form, and does not require an identity of composition; an inorganic body depends for its nature on certain and definite composition, without any relation to structure. It is true that most bodies, whether elementary or composite, exhibit a marked tendency to geometrical arrangements, and all crystallizations are brought about by the operation of polar forces, but an inorganic compound body does not of necessity require any peculiar crystalline shape, or other form for existence.

2. Life, then, is a state of force; the system of nature presents us

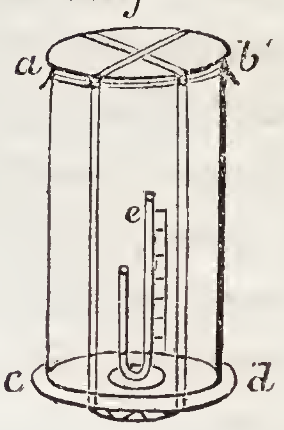
with but four of the chemical elements subject to it, for we are taught to make a distinction between crystalline arrangement and living structure. We have not any direct evidence to show, that all simple substances are in any wise obedient to the laws of vitality; or that when they assume symmetrical arrangements round an axis, that it is an approach to organization; an imperfect organization, depending on the sluggishness of their character, or the incompetency of the vital forces to control the range of their affinities; nor is there any real proof, that the laws directing the atomic arrangement of macled and tri-macled crystals, bear any sort of analogy with those that direct the structural deposit of the radiated class of animals. It is true, that the passage of a polarized ray of light through transparent crystals, has disclosed to us the fact, that their atomic constituents are held together in a state of force, and we judge from the phenomena of their nodal lines, when they are thrown into vibration, that their elasticity varies in different parts; yet the mere fact of their permanence assures us, that they are in a state of stable equilibrium. On the other hand, organized structures are in a condition of instable equilibrium, and require a continued series of adjustments for the perpetuation of their existence. In the crystal, the electrical or polar forces have compensated one another, and its particles being brought into a state of rest, continue so without change; whilst in the living being their situation is only momentary, they are subject to incessant vicissitude and change, their place has to be supplied by new materiel; and to accomplish this end, electrical currents traverse the body in all directions, and machinery more or less complex is employed to bring new matter and carry the effete away.

3. Does this cellular or areolar structure, which appears to be the essential habitat of vitality, owe its properties to the residence of a peculiar force, or are they derived from its organization? If the latter, we ought to find it possessed of remarkable characteristics; of forces arising from the aggregation of particles.

4. It has been known for some years, that gases and liquids pass through porous structures with a considerable force. If over the mouth of a cylindrical jar a thin sheet of India rubber is tied, and the jar exposed to an atmosphere of ammonia, or protoxide of nitrogen, in the course of a short time, by the ingress of a portion of the external atmosphere, a pressure is created, tending to rupture the membrane outwards.

5. That the force exerted in this case is very great, appears from the following experiment. In a cylindrical jar, *a b c d*, Fig. 1, four inches long, and one and a quarter in diameter, a syphon gage *e* was placed, and over the mouth of the jar a piece of India rubber, fortified

Fig. 1



by a layer of stout cloth, was tied. Two pieces of tape, crossing each other at the top, and passing down the sides of the jar, were knotted as tightly as possible at its bottom, and the arrangement was then exposed to an atmosphere of ammonia. In the course of six hours, the India rubber, notwithstanding it was forcibly held down by the cloth and tapes, began to stretch upwards, and the gage had risen thirteen divisions of an arbitrary scale attached to it. In twenty-four hours, it had risen to nineteen and a half, and finally to twenty, after which it remained stationary. On estimating the divisions of the scale, after the experiment was over, it was found that the maximum pressure in this case was about two-thirds of an atmosphere, or ten pounds on the square inch.

6. This effect is not confined to gases, but takes place with equal energy when liquids only are used. In a jar, containing alcohol, a gage was placed, and a piece of human peritoneum was stretched over the mouth, fortified by silk. The whole was then sunk into a vessel of water. In twelve hours it was found that the level of the fluid in the gage had risen the whole length of the scale, and that when the maximum pressure took effect, the gage was exhibiting a condensation of one atmosphere, exactly.

7. Here, then, we have proof that the passage through tissues is accomplished with a degree of energy indicating that the forces which produce it are of a very high intensity. To measure these forces, or to obtain some approximation of their value, the following researches were made.

8. Before, however, proceeding to the detail of these experiments, it is necessary to allude to certain disturbing circumstances which take place, arising from extraneous mechanical action, and vitiating the result. One of the most prominent of these is due to the general leakage which takes place through the open pores of all tissues; a leakage which is to be distinguished from the proper capillary transit. If, for example, a barrier of peritoneum be placed over the mouth of a vessel of water, under ordinary circumstances the escape of the water will be prevented, but if a pressure gradually increasing be exerted on the water, it will rapidly ooze through every pore, and finally if the membrane stand the strain without rupture, will spirt through those of a large diameter. This effect, to a greater or lesser extent, takes place wherever tissues have to resist mechanical pressure; the amount of disturbance arising from it, depends mainly on the diameter of the pores of the structure.

9. In the experiment related in section 5, we have a well marked instance of this disturbance. It might be inferred from that experiment, that the force with which water passed through a piece of peritoneum into alcohol, was not greater than one atmosphere; whereas, in truth, it was much more; but, as soon as the pressure within the vessel by the infiltration of water had amounted to about one atmosphere, the alcohol escaped from the vessel as rapidly as the water entered, by general leakage from the whole surface of the membrane, and the gage therefore gave no evidence of the passage of the liquid. Nor are very porous structures alone liable to this accident; the experiment of the old Florentine academicians shows, that even through the pores of gold, one of the densest of the metals, fluids under a severe pressure will find their way, as appeared when they attempted to compress water in a globe of that metal.

10. This accidental passage through pores, may be made visible to the eye, by condensing about one atmosphere of air into a vessel whose mouth is closed by a sheet of India rubber, and then placing it in a jar filled with water; small bubbles of air will be seen escaping from every part of the India rubber, and passing in great numbers through the water.

11. It has just been stated, that the force with which water passes through a membrane into alcohol, is much more than one atmosphere; this may be proved, by making use of a barrier of a stouter fabric than the peritoneum here mentioned. A piece of bladder being used in lieu of it, the gage indicated when the pressure was a maximum, a force of 1.8 atmospheres; but even this cannot be taken as the true value of the force, for a certain period of time elapses, amounting in this instance to almost two days, before the gage reaches its highest point; and when that is gained, the alcohol has become considerably diluted, and agreeable to a law which will hereafter be pointed out, the amount of force rapidly diminishes as this takes effect. For, as soon as the composition of the fluids on both sides of the bladder is the same, provided the temperature of both is alike, and no mechanical disturbance arises from unequal pressure, all motion either way ceases, and this may happen long before the column of fluid in the gage has reached its highest point.

12. The air gage, however, at the best, is a very imperfect indicator of the force with which gases or liquids mingle, for it will remain stationary, even when the passage is taking place with very great force, provided the rate of the bodies on both sides of the barrier is the same. It gives erroneous results in all those cases where the mechanical leakage exceeds the true percolation, and hence has a

very limited application in all these experiments. Other means are therefore required to test the passage of fluids, and for this purpose there is no arrangement more convenient than that represented in Fig. 2. It consists of a tube, three-eighths of an inch in diameter, and several feet long, bent at the point b upwards, and expanded at $c\ c'$ into a funnel termination. When the instrument is in action, the longer limb $d\ b$ is filled to some determinate height with mercury, which also rises to a certain distance in the shorter leg, above this, and to the height $a\ a'$, some fluid is placed acting as a chemical test of the presence of the gas, intended to be passes through the barrier $c\ c'$, which is tied air tight over the funnel mouth. The following experiment will indicate its use. Having placed the syphon on the mercurial trough, a quantity of mercury was poured into it, sufficient to cut off communication between the two limbs, then in the shorter limb a column of litmus water reddened by muriatic acid and occupying a depth of one-eighth of an inch was introduced; over the funnel mouth a thin lamina of India rubber was tied, and upon that a piece of stout silk, for the purpose of strengthening the barrier. A column of mercury, forty-three inches in height, was next placed in the long limb, and a jar of ammoniacal gas over the short one. In the course of one minute, a cloud of dark blue particles was seen descending through the litmus, and in six minutes it had become uniformly blue; thus proving the passage of ammonia through a tissue of India rubber, against a pressure of almost one atmosphere and a half.

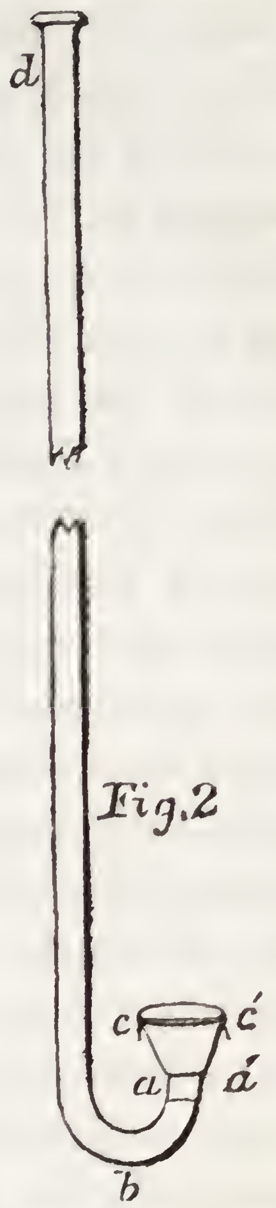


Fig.2

13. There were considerable difficulties encountered in the outset of these experiments in tying on the India rubber barriers, so as to withstand the high pressures to which they were exposed without leakage; an insidious leakage, which took place between the sides of the glass and that part of the India rubber compressed by the string against it. This, however, was effectually prevented by setting fire to a piece of India rubber, and daubing the semi-fluid material on that part of the glass around which the string was to pass; then, on tightly binding on the barrier, it came into perfect contact with the glass, and was retained there by the sticky material, no leakage whatever taking place, unless some part of the arrangement burst.

14. The experiment just related, leads to some important conclu-

sions; we see that the force of impulsion driving ammonia into atmospheric air, exceeds a pressure equivalent to forty-three inches of mercury, the barometric pressure at the time being 29.73, that is to say, exceeding by very near half an atmosphere the force which theory would indicate. The hypothesis of Mr. Dalton, which seems to me to be fully confirmed by the observations of Mr. Thomson, founded on the experiments of Mr. Graham, assumes that gases act towards each other as a vacuum, or in other words, the force impelling the particles of one gas into the interstices of another, does not exceed the barometric pressure; but here we find that the result apparently leads to a very different conclusion. It was from an experiment of this kind that Dr. J. K. Mitchell was led to doubt the truth of Dalton's theory, inferring from his results that gases penetrated each other with much greater force. Such a conclusion however, does not legitimately follow, for it is highly probable that the nature of the barrier itself is very much concerned in the final action. A gas may penetrate into another with a force not greater than one atmosphere, and yet, because of the disturbing agency of the medium through which it must go, it may succeed in lifting a column of mercury equivalent to a pressure of many atmospheres.

15. The evidence, proving that gases do not infiltrate each other with a pressure greater than one atmosphere, is very cogent. Much of its weight is derived from the identity of the resulting volumes of commingled gases; but the most important fact relates to the passage of these substances into each other, when the barrier separating them is very porous, and has no condensing action, as in the case with a stucco plug, which opposes simply a mechanical impediment to their motion, acting, as will be hereafter proved, merely as a temporary valve; a mode of action totally different to that of closer textures. The final volumes exchanged, being inversely proportional to the square root of the densities, and these final volumes representing the true initial velocities, we have a striking illustration of that law of gaseous mechanics, that the velocities of different gases, rushing into a vacuum, are inversely proportional to the square root of their densities. Consequently, we are constrained to infer, that one gas acts towards another equally in the same manner as if it were a vacuum; and, therefore, that the force impelling the particles of one gas into the interstices of another, never exceeds the pressure of one atmosphere.

16. In an experiment made on the passage of ammonia into atmospheric air, it was found, that though the passage of the gas was resisted by a pressure of seventy-five inches of mercury, or upwards of

two atmospheres and a half, it took place apparently as readily as if no such resistance had been opposed to it. The question at once arises, whence is this powerful impulsive force derived? clearly not from the action of one gas upon the other, for there is great probability, as we have already seen, that that force would not be able to lift more than thirty inches of mercury. The porous tissue or barrier *alone*, can be regarded as the seat of this power. This fact, that systems of capillary tubes, or thin tissues, have in themselves certain powers, capable of producing high mechanical action, and operating successfully against the severest pressures that can be brought to bear against them, is worthy of the serious contemplation of physiologists; it is a great error to impute the forces producing these phenomena to the gaseous media. In the tissue itself, we must admit a source of power, a source far transcending that which solicits the gases to penetrate each other. Let us next inquire into the nature of this power.

17. It is well known that porous substances of all kinds and fluids absorb gaseous matter very readily, in volumes varying according to circumstances. Water, for example, absorbs its own volume of carbonic acid, and 480 times its volume of hydrochloric acid gas. In the latter case, therefore, an extremely great condensation takes place. So too, a fragment of porous charcoal, absorbs nearly ten times its volume of oxygen, and ninety times its volume of ammonia; these gases, therefore, exist on the surface of the particles of the absorbing medium, in a state of very high compression. And the reasoning which here applies, applies also in the case where the two gases are separated by a tissue. If, for example, we separated by a medium of this kind, a certain volume of ammonia, from a like volume of nitrogen gas, though at the outset of the experiment both the gases might be existing under the same pressure, yet this equality would very rapidly be lost. The absorption of the ammonia, taking place with much more rapidity than the nitrogen, it would be presented to this latter gas; not under an equivalent pressure, but in a state of great condensation. Under such circumstances, the transit of a gas is not, as will be shortly shown, analogous to the case where it flows under common pressure into a vacuum, or into another gas, but the tissue, continually acting as a perpetual condensing engine, brings the two media in contact with each other, under extremely different conditions; the one in a compressed state, but ready to exert the whole of its elastic force, the other in a state perhaps little varying from its normal condition.

18. If tissues really exert a power of this kind, some might inquire how it is, that when a tube closed at one end with such a structure,

and filled with mercury, is sunk in the trough to its hydrostatic level, that atmospheric air, or any gas to which it is exposed, does not pass through and expel the mercury from the tube. If, it might be said, the gas is existing in such a condensed state in the tissue, what is the reason it does not expand, and drive the mercury down? Experiment proves that this is not the case, but no argument can be drawn from it at all effecting the position here taken. For, as soon as the gas has gained the under-side of the tissue, there is no cause soliciting it to escape any more this way than backwards into its own atmosphere; the pressures each way are equal, and therefore counteract each other's effects. Or, rather, the pressures are unequal, for that tending to expel the mercury is resisted by the hydrostatic action of that fluid, and hence no gas can pass into the tube.

19. We can now understand the rationale of action in Graham's experiment, with plugs of stucco. He found that this material exerted a very slight absorbent power over the gases. Oxygen, hydrogen, nitrogen, &c. not being absorbed in any sensible quantity. When, therefore, he diffused hydrogen into atmospheric air, the stucco not acting mechanically on either of those substances, they were presented to each other under equal and ordinary pressures; and they therefore began to flow into each other, just in the same way that they would have flowed into a vacuum; but very different is the result when we make use of sheets of India rubber, or moistened animal membranes. The stucco plug serves only to make the experiment manageable by opposing a slight resistance to the escape of the gases, and acting, as I have said before, as a temporary valve; so that if a diffusion tube be fitted up in Graham's manner, at the end of the arm of a balance, the gas does not escape so rapidly but that there is time for a very accurate self-adjustment of the apparatus, and the volume of re-entered air can be measured with precision.

20. It might, perhaps, be objected to the view here taken, that the condensation which some gases experience, is more than sufficient to liquefy them; and that, therefore, they do not act simply as gaseous bodies would do towards each other. This condition, however, when it does take place, appears not to change the resulting phenomena, as the following experiment shows. The thermometer being at 38° F., and the barometer at 29.88, atmospheric air, under a pressure of two atmospheres and a half, was exposed under a sheet of India rubber to sulphurous acid gas; care being taken that the temperature of the mercurial trough, and all parts of the arrangement should be as above. The passage of the gas took place with great promptness, the litmus water, used to detect its presence, reddening rapidly. Now, sulphur-

ous acid, according to the experiments of Sir M. Faraday, condenses into a liquid at 45° F., under a pressure of thirty inches of mercury; we know, therefore, that in this trial the gas must have existed in a liquid condition in the barrier, and yet it passed through into atmospheric air, under a resistance almost two and a quarter times sufficient to condense it, and at a temperature eight degrees lower.

21. Having progressed thus far in this part of the inquiry, on the action of tissues, it became important to find if any pressure which could conveniently be brought into action, would restrain the passage of gaseous matter. Resort was first had to the usual mechanical condensing apparatus; but although the college possesses some very good engines of this class, they were found to be ill adapted to the purpose in hand. The necessary motions were always productive of inconvenience, and it was not found possible to carry the condensation to the degree required, or to avoid leakage from some of the numerous joints. After some trouble, the following contrivance was fallen upon, which answers the end perfectly, is not open to the serious objections of the former, and requiring no cock or valve, can be readily made without leakage. A tube of glass about one-third of an inch in bore, of stout substance, and about ten inches long, is bent into a kind of syphon, so that one leg shall be about six, and the other two inches long. The extremity *a a*, Fig. 3, has a lip or rim turned round it, at the lamp; whilst in the longer leg, a thin glass tube *c c*, about one-eighth of an inch in bore, and closed at one end, is included, to serve, as will be hereafter shown, as a gage. Next, the extremity *b* of the syphon is closed, there being inserted through it two platinum wires *d d*, *e e*, parallel to each other, but not touching. The arrangement is then ready for use. Suppose, for example, it was required to pass through India rubber, sulphurous acid gas, into atmospheric air, condensed by a pressure of five or six atmospheres; the long leg of the syphon is to be filled with water, which is excluded from the gage-tube *c c*, owing to the narrowness of its bore; next, a strong decoction of litmus is to be poured into the short leg, until it is about half filled.

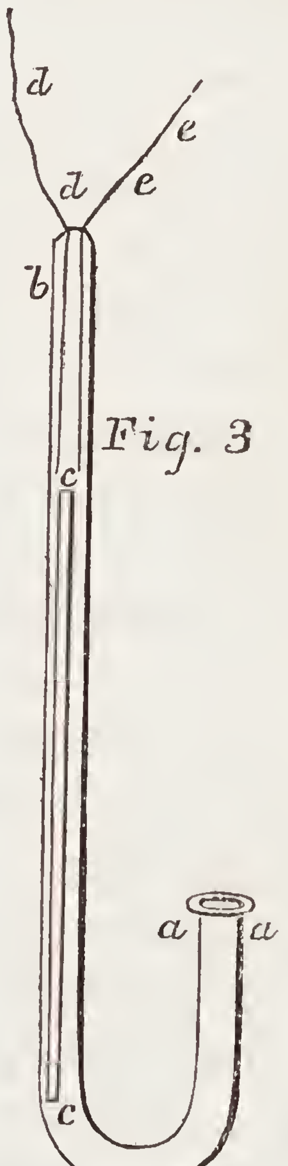


Fig. 3

The rim round the extremity *a a*, is then daubed with a piece of burning caoutchouc, and upon it is tied a thin piece of that substance, with a fine but strong waxed thread. Over this is tied a piece of stout silk

or cotton cloth, for the purpose of fortifying the barrier: the wires *d d*, *e e*, are then made to communicate with the poles of an active voltaic battery, and the condensation commences; for the gas which is evolved from these electrodes rising to the top of the tube accumulates there, causing the column of water in the short leg to rise and condense the atmospheric air above it. The membrane, though fortified, gives way to a certain extent, becoming convex outwards, and as the accumulation of gas in the long leg continues, the condensation of that in the short leg increases, as is indicated by the gage *c c*. A very thin India rubber, of the diameter here used, will stand a pressure from six to twenty atmospheres without rupture, if its silk support is good; and I have found that anointing the edges of the rim with the burnt substance, enables the operator to tie it on so that no leakage shall occur between the India rubber and the glass, even under the severest pressures. When the gage shows that the required degree of condensation is arrived at, the connexion with the battery is broken, and the condensation, of course, stops; the syphon being carried to the mercurial trough, taking care to keep its position erect, its short limb is depressed under the mercury, and carried into a jar containing the sulphurous acid. If, under these pressures, any of the acid gas finds its way into the condensed air, its presence is detected by the reddening of the blue litmus water. It is necessary here to observe, that the indications of the air gage do not give a correct estimate of the amount of condensation, but always represent them higher than they are according to Marriotte's law: it has long been known, that the volume of gas dissolved by water, depends in a great measure on the pressure exerted on it; now it will be found, when the operation is conducted in an instrument arranged as this, that a very large proportion of the air in the gage disappears in this manner; its zero point is therefore altered, and the condensation appears higher than it really is. It may be remarked, in passing, that it is surprising to what an extent the absorption of oxygen and hydrogen is carried in the longer leg, owing to their making their appearance in a nascent form. To ascertain the true condensation, so soon as the passage of the sulphurous acid or other gas has taken place satisfactorily, the membrane is to be punctured with a pin, and when a pneumatic equilibrium is obtained, the height of the liquid in the gage will mark the point, where the zero of the scale should be placed.

22. Some chemists might suppose that there is danger in making use of an apparatus like this, where a high pressure is produced, owing to the risk of an explosion of the compound gases in the long limb, since it is stated in most works on chemistry, that a mixture of

oxygen and hydrogen when compressed, will explode. To ascertain if there was any danger arising from this, as also to know to what extent the condensation could be pushed, by the aid of a voltaic battery, I took a tube *a b*, Fig. 4, and into the closed extremity having fused a pair of platinum wires, and drawn the other into a long capillary tube, bending it at the same time at right angles to the former, I filled it with water, (boiled until all the air mechanically enclosed in it was expelled), except a portion of the narrow capillary part from *d* to *c*, which contained atmospheric air to act as a gage; the extremity *c* was closed. Next, the platina wires were made to communicate with the poles of an active voltaic battery of 120 pairs, and gas slowly accumulated, the current of electricity steadily passing all the time, as was indicated by the deviations of a galvanometer, through which it was made to circulate. Observations were made every few minutes, on the progress of the experiment, the last of which, indicated a pressure of slightly upwards of forty-three atmospheres, and shortly after it was taken, the tube burst; not, however, on account of the explosion of the gaseous materials in it, but because it could not sustain so excessive a pressure tending to burst it, a pressure equivalent to that of a column of mercury, nearly thirteen hundred inches high.

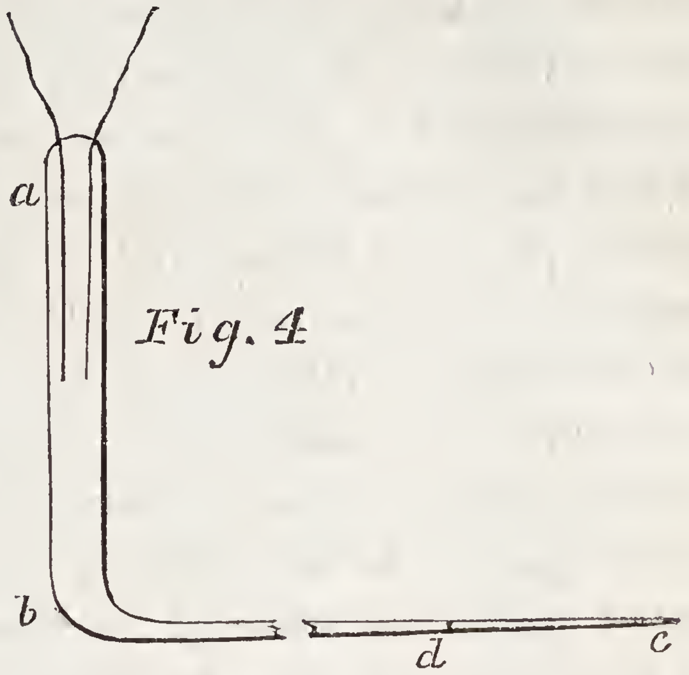


Fig. 4

23. These results lead us to some remarkable conclusions, in relation to the passage of voltaic currents. Sir M. Faraday found, that they cannot pass along such media as water, without effecting its decomposition; in fact, that the transfer of elements seemed to be absolutely essential to the transit of the electricity. Now it might be supposed, that if some powerful force were brought to bear against and antagonize this,—as where by a severe pressure the oxygen and hydrogen are prevented from being evolved—one of four things must happen: 1st, That the water would become a non-conductor. 2nd, That the vessel, no matter how strong it might be, would burst. 3d, That the current would pass without any decomposition happening; or lastly, that the current would pass and gas be evolved, but as fast as evolved, it would be dissolved in the water. A quantity of boiled water was hermetically sealed up in a glass tube, which it filled entirely, except a small space occupied by a bubble of air, probably not more than one-fiftieth part of an inch in diameter. A pair of

platinum wires had been fixed into the tube, so as to transmit the voltaic current. The current passing freely as was indicated by a galvanometer, decomposition of the water ensued; extremely minute bubbles making their appearance, the water absorbing the greatest part of them; its temperature rising very much, so that the tube communicated a sensation of warmth, when touched by the finger. When the pressure was estimated to have risen to about fifty atmospheres, the tube burst; and in an instant, all the gas that had been imprisoned in the water, made its escape, throwing it into a violent effervescence. Hence, we find, that when water is enclosed hermetically in a vessel, and a galvanic current passes through it, decomposition ensues, a portion of the gases making their appearance in the gaseous form, replacing the small space occupied by the decomposed water, the whole of the remainder being absorbed by that fluid, as fast as it is given off. When the pressure is high, it is probable that the dimensions of the vessel become greater, and hence the little bubble of air accumulated, exceeds in bulk the volume of decomposed water. It is also found, that any pressure up to forty or fifty atmospheres, may be commanded in this way.

24. Being thus furnished with a very convenient and very portable method of condensation, I proceeded to examine the force of passage of gaseous matter into atmospheric air. Sulphurous acid, passed instantaneously into atmosphere air, against a pressure equivalent to two hundred and twenty inches of mercury, or seven atmospheres and a third. Some experiments were made on the absorbing action of the sample of India rubber here used, which had been softened in ether for the purpose of procuring it in thin sheets. Of the gas here spoken of, it was found to absorb sixteen times its own volume. It is to be expected, that even had a much more powerful pressure been applied, the gas would nevertheless have gone through.

25. The curved form of the instrument, described in 20, was found to present certain inconveniences, when pressures upwards of six or seven atmospheres were made use of; the volume of air, which at the beginning of the experiment, occupied the greater part of the extent of the shorter limb, had now collapsed much in its dimensions and owing to the unavoidable giving way of the India rubber and its silk, had retreated out of sight, beneath it. It was not found convenient to lengthen this limb, for that entailed a corresponding increase in the dimensions of the battery, in order to produce a given condensation in a given time; an objection also applying, in a measure, to the apparatus even at lower pressures. Though I had the command of batteries, consisting of 600 pairs of four inch plates, I preferred a

modification in the instrument itself, than a resort to such an energetic, but unwieldy apparatus. A straight tube was therefore taken, about three-sevenths of an inch in bore, Fig. 5, and a rim turned on it at *a a*, at the closed extremity the platina wires *b c* entered, a gage tube *d d* was dropped in between them, water was then poured in to the height *e e*, and lastly, a tube *f* containing the appropriate chemical test, was inserted, its bottom resting on the top of the gage tube. Nothing then remained but to tie on the India rubber with its silken support, and by the voltaic battery to proceed to condense. In this instrument, the test fluid was never out of sight, nor did the volume of the gas suffer any inconvenient change, the gage too was well located for observation, and a given condensation could be produced in less time, and by a less amount of electricity, than with the syphon tube; for the space contained between *a a* and *e c*, was less in volume. As an auxiliary arrangement, a glass tube *a a a a*, Fig. 6, one inch in diameter, and ten long, with a support *b* was taken, and its mouth ground true, so that a piece of plate glass *e c* would close it, when placed over it; this tube served in many cases as a gas generator, and also as a receiver for the tube, Fig. 5, which was dropped into it. It is to be observed, that in the arrangement here adopted, the gaseous matter evolved from water, mingles with the atmospheric air in the upper part around the tube *f*, and therefore the passage of the gases tried, does not take place into atmospheric air, but into a mixture of oxygen, hydrogen and nitrogen gases.

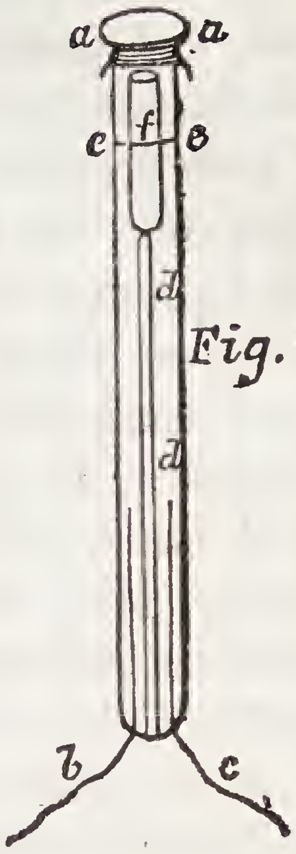


Fig. 5

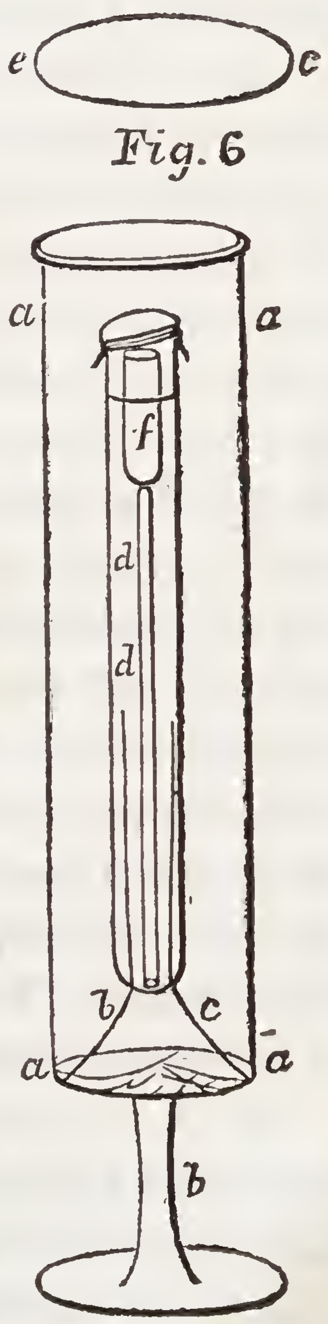


Fig. 6

26. The tube *f* being filled with lime water, and a pressure amounting to ten atmospheres being produced in the vessel, it was exposed to an atmosphere of carbonic acid, generated in the tube *a a a a*, Fig. 6; procured by dropping a few pieces of marble into the tube, and pouring thereon dilute muriatic acid. When the vessel was full, the plate *e c* was laid upon it, and any surplus gas generated, escaped by lifting it up. In the course of a few minutes, the upper part of the

tube containing lime water, began to look milky, and in an hour, a cloud of particles of carbonate of lime had fallen to the bottom.

27. Again, having filled the tube *f* with a solution of acetate of lead, and produced a pressure amounting to twelve atmospheres, it was exposed to sulphuretted hydrogen, generated in the vessel, Fig. 6, from protosulphuret of iron, and dilute sulphuric acid. In a very short time, the black sulphuret of lead appeared, giving tokens of the rapid passage of this gas through the barrier. A comparative experiment was made, in order to discover whether the transmission took place more slowly than when it was not resisted by such a severe pressure. It appeared, however, so far as the experiment could be tried under similar circumstances, as regards the thickness of the barrier, &c., that sulphuretted hydrogen went through the barrier against a pressure of three hundred and sixty inches of mercury, as readily as if no such force were exerted against it.

28. As numerous experiments, which had been tried on various gases, had hitherto failed to indicate any obstacle to their passage, it became necessary to know, whether at the extremest pressures that could be commanded, they would pass through a barrier. To accomplish this I took a strong and narrow tube, and having turned a rim at one end, and sealed fine platina wires in the other, I filled it with distilled water, and enclosed a narrow capillary tube in it, the gaseous contents of which were small. As a test, in the upper part of the arrangement, and in lieu of the tube *f*, I placed a slip of paper, which had been alternately soaked in acetate of lead and carbonate of soda; the India rubber was fortified by a piece of very strong silk, which was carefully tied on, there was not, therefore, any gaseous matter present except the small quantity of atmospheric air in the gage-tube. The condensation, therefore, went on with great rapidity, a mixture of oxygen and hydrogen gradually accumulating in the top of the vessel, bulging out the India rubber and silk barrier until it was almost hemispherical. It was my intention to try a pressure of twenty-five atmospheres, and when that was supposed to be reached, the instrument was placed in an atmosphere of sulphuretted hydrogen. Very soon the test paper became of a tawny appearance, and finally it was quite black. The pressure, when the experiment was over, was found to be twenty-four and a quarter atmospheres.

29. At a temperature of 48° F., and pressure of 29.74 B. sulphuretted hydrogen gas passes into a mixture of oxygen and hydrogen, though it may be resisted by a pressure of twenty-four and a quarter atmospheres, or nearly seven hundred and thirty inches of mercury. Like sulphurous acid, it penetrates through a barrier, and

then diffuses into an atmosphere beyond it, at pressures greater than that which is necessary to condense it into a liquid.

30. If, as it thus appears, no pressure which we can command is sufficient to restrain one gas from passing into another, we next inquire what obstacle the condensed gas exhibits. There is abundant and conclusive evidence, that under ordinary circumstances of temperature and pressure, this medium bears the same relation to the percolating gas that a vacuum would do; inasmuch as the rate of discharge into it is identically the same as it is into a vacuum. For the purpose of illustration we may, therefore, regard it to all intents as a vacuum, and reason accordingly. If the particles of heterogeneous gases possess no repulsive tendency, as respects each other, but are perfectly quiescent and neutral, if the presence or absence of one makes no difference nor produces any retardation on the motions of the particles of the other, then it is apparent that it is immaterial how many of such particles are condensed together into a given space, owing to the want of repulsive action in those particles, that space will be as much a vacuum to any other gas, as it ever was. Now it has been shown by the experiment above cited, that certain gases will diffuse into others, even though the latter may be condensed into a space twenty-four times less than that which they would ordinarily occupy. The vacuum is not less a vacuum because it is contained under smaller dimensions, any more than a torricilian vacuum is less perfect when the mercury is made to rise nearly to the top of the barometric tube, than it was when there was a vacant space many inches in length. Theory would therefore indicate that these diffusions will take place under all pressures, provided the gaseous condition subsists; and this conclusion is abundantly borne out by the experiments herein detailed.

31. Having thus shown how it is that when gaseous matter is on one side of a barrier, the space so occupied may be regarded as a vacuum, even though the gas should be highly condensed, I come next to the consideration of a much more intricate part of the subject, the action of the barrier itself as an areolar tissue, which is the more immediate object of this paper. I have already stated that the results of Dr. Mitchell and Professor Graham apparently exhibit a striking discordance; it will here be seen that the facts reported by those chemists can be readily co-ordinated.

32. Both of them appear to have made trials of the absorbent power of the barriers they respectively employed; Prof. Graham having operated on a mass of stucco of certain dimensions, and found its absorbing power, in relation to most gases, very low; Dr. Mitchell on a thick cylin-

der of gum elastic; but neither of them appear to have had any idea of the importance of this element in the production of the final result. In the case of the action of stucco, this indeed is a remarkable circumstance, for in all those instances where the absorbing power of the stucco was great, the equivalent volumes of diffusion, as obtained, were without exception erroneous. Dr. Mitchell, on seeing certain gases pass into each other, with a force that was greater than the pressure of sixty-three inches of mercury, and inferring that there was no *vis a tergo* in play, was obliged to impute his result to the inherent power of gaseous penetration, hence he came into direct collision with the Daltonian hypothesis. On the other hand, Prof. Graham, supposing that in all his erroneous cases, the deficit was to be imputed to the porous mass, which in some manner detained and absorbed the gases, found in every other instance a full confirmation of the doctrine of a vacuum.

33. The whole phenomenon depends, however, upon the action or inactivity of the areolar tissue itself: it will be convenient for the better understanding of it, to consider it under two heads. First, where the tissue exerts no absorbent action on the media, or absorbs both to the same extent; and secondly, where one is absorbed to a much greater extent than the other.

34. In the first case,—the velocities with which any two gases pass into a vacuum are inversely proportional to the square roots of their densities respectively; moreover the volumes that so pass vary directly as the velocities, and therefore may be taken as an index and measure of them; but, as the mass of each gas is expressed by the product of its density into its volume, it may be also represented by the velocity multiplied into the density; and, as the square of the velocity of the one, multiplied into its density, is equal to the square of the velocity of the other, multiplied into its density, whatever may be the difference of the specific gravity of the two gases, their mechanical momentum will always be the same; the resistance they meet with in passing through the tissue is common to both, and equal in both cases; and hence the initial velocities of diffusion ought to be inversely proportional to the square roots of the densities; and as during the progress of the experiment the impelling force of the one gas is equal to the expelling force of the other, the resulting momenta of the two currents is still equal, and the final volumes are such as are found by direct experiment.

35. We now come to consider the second case,—where the areolar tissue presents one of the gases in a condensed form to the other, or in other words absorbs it; and here we have to refer to a fundamental pro-

position of dynamics, that when the moving force and the matter to be moved vary in the same proportion, the resulting velocity will always be the same. An illustration will show the application of this principle to the case in hand. If a cylinder of air, fitted appropriately with a piston, communicates with a vacuum by means of an aperture, it is immaterial whether the air be allowed to flow into the void without any pressure, or whether it be urged by a direct action on the piston, its velocity as it goes into the void will be in both cases the same; for, if it be compressed, the immediate action of the force exerted on the piston is to reduce the air in the cylinder to such a density that its elasticity shall be equal to the compressing force, and because the elasticity varies directly as the density, the density of the air increases with the impelling force. The matter to be moved is increased, therefore, in the same proportion with the pressure, and therefore the final velocity is the same. Now, what is here said of a cylinder of compressed air, applies evidently to the action of an areolar tissue, which is nothing more than a perpetual and equable condensing engine. If it increases the elastic force of one of the gases by compressing it, at the same time it increases its density; and, therefore, its velocity of transit is the same as though it had not suffered any action of compression.

36. Such is the case whilst the gases are engaged with each other in the tissue, but as soon as they are passed from it, and are beyond the reach of its attractive force, a new condition of things takes place—the condensed gas being no longer under restraint, expands freely into a void, and when there measured, gives a resulting volume totally different to what it would have been, had not the tissue compressed it. Suppose, for example, we placed on one side of a tissue, carbonic acid, of which it would condense its own volume, and on the other atmospheric air, on which it exerted no action. Whilst the two gases were engaged together in the tissue, one would be presented to the other under an elasticity double of that which it would have had had no absorption gone on; but since its density is directly proportional to its elastic force, the continual velocity with which it would rush into the other gas, is the same as though no compression had occurred; the rate of exchange in the areolar tissue is the same as under normal circumstances; that is to say, every volume of air replaces 0.8091 of compressed carbonic acid, but so soon as this gas has reached the opposite side of the barrier, and there escapes, its elastic force being restrained by no compression, causes it to assume its original dimensions.

37. It will be readily perceived, that the theory here given, depends

on the principle, that however much a gas is condensed, it will at all pressures rush into a vacuum with the same velocity. The elasticity of a gas in any state, is measured by the force under which it exists, and this is ordinarily the pressure or weight of the atmosphere; it follows therefore, that though the density of gases may vary, yet they have all the same elastic force; but, when pressure is exerted upon them, the density and elasticity increasing together, their velocity in rushing into a void is always, and under all pressures, a constant quantity.

38. We may now apply this reasoning to certain practical cases. Mr. Graham found, that the absorption of carbonic acid by a porous plug of stucco, was very small in amount, and the absorption of atmospheric air is equally minute. Accordingly, when these two gases are separated from each other by a screen of that substance, they diffuse according to the law of the square roots of their density. One volume of air, replacing 0.8091 of carbonic acid, the gas therefore, on that side of the screen where the carbonic acid was, increases in quantity. Now, when instead of a screen of stucco, a thin lamina of India rubber is used, which is found upon trial to condense one atmosphere of carbonic acid, whilst it does not act upon air, the same rate of exchange ensues; but there is a diminution of gaseous matter on the side containing the acid, and because the screen condenses one atmosphere, there should be found only half as much gas as would represent the equivalent volume of diffusion, had the screen possessed no condensing power.

39. One hundred and sixty-one measures of carbonic acid gas, were confined in a tube under a thin sheet of India rubber, and suffered to diffuse for thirty-six hours. To prevent as much as possible any disturbing action of the fluid, over which the experiment was tried, a saturated solution of common salt, which absorbs carbonic acid slowly, was made use of. The gaseous contents of the tube decreased in their dimensions very rapidly, and when measured, were found to consist of 98 volumes only. In the mean time, a tube closed at one end filled with the same quantity of carbonic acid, and placed by the side of the former, had decreased about five measures; we may therefore assume, that the quantity of gas that should have been found in the diffusion tube, ought to have amounted to 100 measures nearly. Now the specific gravity of carbonic acid gas is 1.527, the reciprocal of the square root of which is 0.8091. Hence, under ordinary circumstances, one volume of air should replace 0.8091 of carbonic acid gas; but, as in the experiment here tried, the barrier produced

a compression, one volume of air should displace 1.6182 of carbonic acid, the amount observed very nearly.

40. I would not here be understood to say, that there are no other disturbing actions going on in areolar tissues, except those which result from their absorbent power. A great many facts show, that under peculiar conditions, they are able to produce decompositions of a certain sort. Often, their regular action as indicated by theory, seems to be entirely departed from; great disturbance arising from the fact, that when two gases are absorbed together by any areolar tissue, they experience a greater condensation than each would in a separate state. The presence of nitrogen or carbonic acid, in any porous mass, increases the action of that mass on oxygen, more of the latter being condensed. A piece of charcoal, impregnated with oxygen, condenses more hydrogen than it should do, and the presence of hydrogen facilitates the condensation of nitrogen. It is therefore impossible to foretell what the result of diffusing one gas into another will be, by simply ascertaining how many volumes of either alone will be absorbed by the tissue, inasmuch as a greater or lesser condensation may happen, when both are employed together.

41. Variations of temperature, which probably affect the power of absorption, and thereby the diffusion volumes, are experienced by all tissues. When charcoal, or any other porous mass is placed in an atmosphere of gas, which it can condense rapidly, its temperature rises, the effect apparently depending more on the velocity of absorption than on the final amount. In the case of ammonia, it does not even require a thermometer to discover this increase of temperature, for it is very sensible to the touch. On the other hand, when this condensed gas makes its escape, a corresponding diminution of temperature happens, it is immaterial by what means the liberation of the gas is effected, the same result uniformly follows; if, for example, a porous mass saturated with carbonic acid, be exposed to an air pump vacuum, in connexion with a thermometric arrangement, the gas as it is liberated from the pores of the structure, by the action of the pneumatic machine, gives rise by its expansion to the production of cold. Or, if the same porous mass, saturated in like manner with carbonic acid, be exposed to an atmosphere of hydrogen, it absorbs but a small quantity of this latter substance, whilst a very large amount of the former is liberated from its condensed state, and the thermometer indicates a fall of temperature; the resulting volume of the mixed gases being much larger than the original volume of hydrogen. Again, if a porous mass, which has absorbed its due volume of hydrogen, be immersed in an atmosphere of ammonia, the

resulting volume of the mixed gases is much smaller than the original amount, and the porous mass becomes hot.

42. The observations here made on the vicissitudes of temperature, which an areolar mass experiences, when successively immersed in an atmosphere of different kinds, obviously apply when the exposures instead of being consecutive, are simultaneous. If, for example, a barrier separates carbonic acid and hydrogen gas, and absorbs the former to a large amount, but exerts little or no action on the latter, then the opposite sides of that barrier will be unequally heated. Suppose, for illustration, we call that surface of the barrier which looks toward the carbonic acid C, and the surface looking toward the hydrogen H, then because of the condensing action of the barrier on the acid gas, the surface C will become hot, but because the gas so soon as it has passed the barrier expands, as into a void, when it reaches the surface H, that surface will become cold. We see, therefore, that immediately after the action of the membrane or barrier is first set up, the absorption of the carbonic acid takes places on a hot surface, and its evolution from a cold one. Whereas, the absorption of the hydrogen takes place on a cold surface, and its liberation from a hot one. A modified result of course happens, when both gases are absorbed in different degrees, and any prediction of the resulting action becomes a matter of much difficulty. Where the barrier is very thin, or has a high conducting power, as respects caloric, this distinct surface action may not rigidly occur, but the whole of the structure experiences some determinate rise or diminution; a mean of the condition of the two surfaces respectively.

43. I proceed lastly, to the developement of the general law of equilibrium, the fundamental statical law of the phenomena here under consideration. We have been considering the relations of an absorbing medium with two others, situated on opposite sides of it, and the particulars of their mutual transit into each other; it is plain, however, that sooner or later all motion of the media must cease, and that before every thing can obtain that state of repose, certain conditions have to be fulfilled.

44. The most eligible method in practice to determine this, is to expand a soap bubble of determinate dimensions, with one of the gases, in a jar whose capacity is known, filled with the other. The extreme degree of thinness to which soap bubbles may be blown, reduces the duration of the experiment within reasonable limits, and by taking care to prevent evaporation from the surface of the bubble, there is little risk that when once well formed, it will burst before the end of the trial. A few experiments will show the degree of viscosity which

it is proper the solution should have. In an interval, varying according to circumstances from five minutes to half an hour, the process will have been completed, and a state of equilibrium gained. All that then remains to be done, is to measure and determine by analysis, the constitution of the gas within the bubble, and also that of the atmosphere in which it was blown.

(*a*) A soap bubble, containing 200 volumes of atmospheric air, was placed in an atmosphere containing 707 of the same gas. In ten minutes, the contents of the bubble being measured, were found to consist of 200 volumes, containing 20.5 per cent. of oxygen. The outer atmosphere consisted of 704 volumes, containing 20.5 per cent. oxygen.

(*b*) Two hundred measures of nitrogen were exposed to an atmosphere of atmospheric air for thirty minutes in a soap bubble; at the close of that time, there was found in the bubble 216 measures, 15.50 per cent. of which were oxygen, and 100 measures of the gas on the outside contained also 15.50 per cent. oxygen.

(*c*) Two hundred measures of nitrogen were exposed in a soap bubble to an atmosphere of oxygen, the increase of size was very well marked; in thirty minutes, there was found in the bubble $361\frac{1}{4}$ measures, of which 62 per cent. were oxygen, and the atmosphere outside contained $62\frac{2}{3}$ per cent. of oxygen.

(*d*) Two hundred measures of oxygen were exposed in a soap bubble to an atmosphere of hydrogen for fifteen minutes; an expansion took place, the result measuring $207\frac{3}{4}$ volumes, of these, $16\frac{3}{4}$ per cent. were oxygen, the remainder hydrogen; and the gas outside of the bubble had identically the same constitution.

(*e*) Two hundred measures of hydrogen were exposed in a bubble to an atmosphere of oxygen for thirty minutes; 119 were found in the bubble, of which 47.75 were oxygen, but the atmosphere outside contained 50.50 per cent., and this was the greatest deviation from identity of composition inside and outside the bubble, that occurred in a number of trials.

45. From the foregoing paragraph, we deduce, that the general law of equilibrium asserts the identity in composition of the gaseous media, on both sides of the barrier.

46. It follows from this, that when any quantity of gas is enclosed under a barrier, in a vessel which is freely exposed to the atmosphere, the whole of that gas will pass out, and a certain portion of atmospheric air gain entrance. In this way alone, can the condition of the law of equilibrium be fulfilled.

47. The obvious application of these results, in a physiological

point of view, is to the function of respiration. In no order of life, however, does the respiratory mechanism coincide with these arrangements of two gaseous media, separated from each other by a barrier. In those tribes which breathe by lungs, the pulmonary vessels present themselves on the remote bronchial cells, and the arrangement is in effect, a liquid and a gas, parted from each other by a membrane. Chemical physiologists have hastened to apply the discovery of Dr. Mitchell in this case, and have done right. But still, the chain of evidence is incomplete, for we have not yet seen it proved, that gaseous matter in union with a liquid, will leave it and pass through a barrier to join a gas on the other side. The following experiment will supply this defect. A small jar, the mouth of which was closed with India rubber, and its opposite end made to terminate in a tube one-eighth of an inch in diameter, whilst full of atmospheric air, was sunk in a vessel containing water impregnated with carbonic acid. In a very short time, the acid gas leaving the water, went through the barrier, and as it accumulated in the jar, was delivered by the short tube at the other end, and passed up in bubbles through the water.

48. Branchial respiration deviates still more from the simple type, for we have here two fluids, presenting gaseous matter to each other for intercharge through a membranous screen. In one of them the gas is in a state of solution only, but as to what its condition in the other may be, we can scarcely say. The phenomenon, however, becomes obviously much more complex. In bronchial respiration, the account which Mr. Graham gives of the process by which the little cells empty themselves into the trachea, is probably correct; and the same observation undoubtedly applies to the case of the respiration of insects; but the function of respiration itself is quite another thing, and depends upon very different laws than those of gaseous diffusion.

49. The issue of these investigations, besides co-ordinating the observations of Dr. Mitchell and Professor Graham, has a far more important application. It shews us indisputably that membranes have special mechanical functions, depending on the conditions of their texture; and that often they are, *in appearance*, the generators of power equal to the pressure of many atmospheres. It is not pretended, however, that the foregoing paragraphs contain the whole theory of areolar action, the object of this communication being limited to a discussion of some of those mechanical functions, which have led chemists to conflicting results. Writers on physiology have suspected that membranes were springs of power, both mechanical and chemical, but the direct proof, from actual experiment, has never until now been furnished.

Hampden Sydney College, Feb. 12th, 1838.

Art. III. *On Ice and Chloride of Soda in Scarlatina Cynanchica, with Observations.* By Samuel Jackson, M. D., late of Northumberland, now of Philadelphia.

We must premise that we are not about to write an elaborate essay, or to say all that can be said or imagined concerning the history and treatment of scarlatina; but merely to offer some desultory observations which appear necessary to the full developement of our practice with *ice and chloride of soda.* Our paper will, therefore, be replete with abrupt transitions, which cannot be avoided without an inappropriate multiplication of words.

The scarlatina may be fairly considered as one of the most interesting diseases to which the human family is liable. It extends over the greatest portion of the globe; every child is considered as subject to it; and from its frequent mortality among young children, it becomes a subject of intense interest to parents. In the treatment of a disease so frequently fatal as this, in its severer forms of malignant scarlatina and putrid sore throat, a remedy of greater efficacy than any hitherto known, is no inconsiderable acquisition to medical science.

But of making many books, said the wise man, there is no end. If this reproof had a just application to the days of Solomon, what shall be said of the present multiplication of literature, even in medicine alone? As some apology then for writing on the present occasion, we shall introduce some extracts from a few of the letters of our medical friends.

From William H. Magill, M. D., of Danville, Pennsylvania.

"As the use of ice in my practice had been suggested by yourself, I felt desirous of testifying to its excellency in the local treatment. In the early stage of this disease, it has certainly effected more in my hands than all other remedies, in counteracting the tendency to ulceration. There is one peculiarity in the remedy, that from its soothing and grateful effects on the parched and painful throat, whether of the adult or child, it is unceasingly solicited."

From Aristide Rodrigue, M. D., of Sunbury, Pa., July 19th, 1834.

"I think it my duty to communicate to you the result of my treatment of the *putrid sore throat*, especially as I am indebted to you for the principles of the course I pursued. The success was such that this formidable disease may now be truly considered as divested of its once frightful mortality, and reduced to one of the least fatal.

"In the winter of 1832–3, this disease first appeared in the neighbourhood of Bald Eagle Tavern, Huntingdon county, previous to which it had been spread-

ing through the country in every direction, and proving very fatal under the old stimulating practice. From that period to this I count upwards of one hundred and thirty cases, in my own practice, of genuine putrid sore throat, occurring in those parts of Huntingdon, Clearfield, and Centre counties, adjoining the neighbourhood of Philipsburgh, then my residence. Many slight cases of inflammation of the throat with fever, which immediately yielded to local applications, I do not enumerate. The disease assumed, in the greater number of the above cases, the very worst form, spreading over the whole of the fauces and posterior nares, leaving, after the sloughing, deep cavities, the tonsils almost eaten away, and in a few cases the uvula.

"The treatment consisted in bleeding from the arm; leeches to the throat; purging with Epsom salts and a solution of tartar emetic; gargles of chloride of lime or soda. But my chief dependence was upon ice, or iced water, which was *constantly* administered, either by holding the ice in the mouth, or by giving the iced water. The grateful feelings produced, and the marked benefits always derived from its use, compel me to acknowledge my entire confidence in its power over this dreadful disease."

From J. R. Lotz, M. D. of New Berlin, Union county, Pa., January, 1838.

The Doctor writes me that he has "practised extensively in this district; that in mild cases, attention to the bowels with the antiphlogistic regimen and ice, were all that proved necessary; that the cases, however, thus easily managed, were comparatively few, as the disease was generally attended with a high degree of excitement, the fauces much swollen and of a dark colour. In this form of the disease, I commenced my treatment with cathartics. If there was much pain in the head, I ordered cold applications to it with ice to the throat. When the above treatment was promptly used, very little was left to be done. I do not recollect an instance of ulcerated throat wherein ice was diligently tried.

"In the congestive form, wherein there was much apparent debility and oppression, I generally had recourse to the warm-bath with cold applications to the head. Bleeding was almost universally necessary, and was performed in the jugular vein, or temporal artery. As soon as reaction was established, evacuants and the constant use of ice, was all that proved necessary.

"About the beginning of September, the disease still raging, and there being but one ice-house in town, the benevolent owner, John Laschelles and his family, denied themselves this luxury, and kept it all for the benefit of my patients. Not unfrequently I wrapped large pieces in flannel and tied them to my saddle, for the use of my country patients.

"It is my decided conviction that ice in the scarlatina, is the most useful article in the whole catalogue of remedies. I have also used it in common inflammations of the throat, and always with decided advantage."

From the Thesis of my former pupil, Dr. Henry Pleasants, graduated in the University of Pennsylvania, 1834.

"Before Northumberland was visited by this dreadful scourge, great ravages had been committed by it in several of the neighbouring towns. Many children fell victims to this disease, and a great majority was thought to have perished from ulceration of the throat."

After mentioning the great alarm that was excited in our neighbourhood by the approaching malady, the Doctor continues by stating the treatment adopted by the physicians of those places, many of whom he says, and justly too, "were held in high estimation."

"With a knowledge," he adds, "of the awful fatality which it had caused in the neighbouring towns, it is not surprising that the residents of this place (Northumberland) felt the greatest solicitude for the welfare of their children. Here, luckily for the inhabitants, the career of their enemy was arrested, here was it to encounter a powerful, a successful opponent." * * *

"It appeared to my preceptor, Dr. S. Jackson, that the powers of chloride of soda evidently pointed it out as one of the most promising substances for bringing these ulcers to a more healthy action. A knowledge of the ill success which had attended the common means in the hands of his brother practitioners, determined him to make an application of it in the first case which might seem too severe to yield to the means of known efficacy in mild cases. It was tried in a case which appeared almost desperate, and with success. Again and again was it tried, and every trial increased the Doctor's confidence."

Here Dr. Pleasants gives the case of Mr. Greenough's child, which we shall insert hereafter.

"To enumerate cases in which life appeared to be preserved by this article, I would indeed find no difficult task; but as none more clearly than the above, could prove its power, to avoid useless prolixity they shall be omitted."

Such is the testimony of my pupil, who was present in Northumberland, seeing and hearing nearly all that occurred relative to this disease, during the first year of its period.

The Doctor's Thesis is particularly on the chloride of soda; but he has not neglected the use of ice.

Such are only a few of the testimonies which we might adduce, but they are highly respectable; they are known to many of the first physicians in Philadelphia, and are therefore sufficient for our present purpose.

In the autumn of 1831 and the winter following, this disease prevailed extensively throughout a large tract of country to the west and north-west of Northumberland, not then approaching us nearer than Lewisburgh, eight miles above our town. Throughout all this extensive region it proved very fatal, *as stated above by Dr. Rodrigue*, frequently carrying off whole families of children, and sometimes adults. As it proved very mortal in the town of Lewisburgh, Union county, my friend, Dr. Thomas Vanvolzah, requested me to visit his son and several other patients in consultation. This was the first experience I had ever had in the malignant grade of the disease, and fearing that

it might soon obtrude itself upon my own circle of practice, it became the subject of my earnest inquiry and contemplation.

Nor was it many months till all my fears were realized. The disease invaded my own family, for an account of which I refer to my letter to the Editor of this Journal, in May, 1832, and published in Vol. XII. p. 261.

A subsequent letter was published in Vol. XII. p. 550, in which our further experience was briefly detailed, as also some successful experiments with *chloride of soda* in the sphacelated state of the throat. I then said, that I hoped to give the profession at some future time, a full detail of all that I might learn in the course of my further experience. The cause of this long delay has been frequently inquired of me, both verbally and by letters. I have to answer in the *first* place, that after the disease had blown over in its epidemic form, it was frequently occurring sporadically, and I was willing to wait, not only for further experience, but even till the period of this malady might have entirely terminated. *Secondly,* because I had already said enough to lead others to experiment, and to communicate on a subject so truly interesting.

Since those letters were written in 1832, we have had ample experience with *ice and chloride of soda,* in the treatment of this wayward disease; and we have great pleasure and entire satisfaction in submitting them to the profession, as remedies of surprising efficacy; which, being highly rational to the wise, and truly plausible to the ignorant, cannot, when merely heard of, be neglected by any conscientious physician.

But let us here premise, that we are not boasting of any superior skill, that we refer all our success to a mere accidental *coup d'esprit* which led us to follow the indications of nature, and for which we neither desire nor expect any commendation whatever. We have already had more than our meed of praise among the grateful parents in our former sphere of practice.

And let us premise further, that we are not proposing exclusive and infallible remedies in the manner of the quacks. A distinguished physician in this city said to me, "our patients will die notwithstanding your ice;" true, there are many advanced cases that no remedy will ever control; there will always be cases so vehement in the onset that congestions with convulsions will quickly supervene; and there will often occur some patients so young and so unmanageable, as to frustrate continually our most resolute efforts.

In this disease, as in every other, there is no certain routine of remedies. The physician when first called, must consider *the begin-*

ning, the middle, the end, and must contemplate the probable catenation of coming circumstances. This extensive view of things will enable him to consider of a probable succession of remedies which he will have to vary with the ever varying states of the system, whether effected by nature or art, or by the waywardness of patients and their friends. This extensive contemplation of all that *has* happened and of all that *may* happen, is necessary in the treatment of any disease, but particularly of this, wherein the changes for the worse are sudden and precipitous. It is this extensive prognosis which gives the experienced physician his peculiar pre-eminence; he is never taken by surprise happen what may, he is therefore prepared for every emergency, and is careful to forewarn his nurses of every probable change.

Upon visiting a patient in this fever, the first thing to be ascertained, is, whether the excitement is general, or, in other words, whether the whole body is equally warm; for if the head be hot and the extremities cold, the first indication is, to equalize the temperature. The feet and hands must be quickly warmed, and then ice or cold water applied to the head, and ice dissolved in the fauces and stomach, if there be inflammation in the throat, or even if there be merely an excess of internal heat. It is a fact, however surprising to the inexperienced, that merely reducing a local excess of heat in the early stage of disease, will diffuse warmth over distant parts. Dr. Armstrong plunges the whole body except the head into a salt water warm bath. This is no doubt very effectual, but it is often troublesome, and may be generally supplied by more convenient methods. Sinapisms and plasters of capsicum, with frictions, may be often necessary. It is delightful to contemplate the change which this treatment will often effect, even in a few minutes. So accustomed are my patients to see me attend to this state of things, in every species of fever, that all of them, poor and rich, wise and foolish, are wont to inform me how careful they have been to keep the head cool and the extremities warm.

Emetics. These are highly important, and may be given with various intentions, as in many other fevers. They are particularly useful in the early and even in the forming stage, but certainly before the reaction is high or much determined to the brain. In such cases they tend most effectually to the equalization of excitement, to the prevention of what are called congestions, to the total resolution of the incipient inflammation, thus mitigating the disease and shortening its course. Those physicians who maintain that a typhus fever cannot be cut short, we humbly consider as labouring under a most

melancholy and pernicious error. It is true, we cannot cut the thread of the disease, but we can bring the system into such a state, that nature throws off the malady as Celsus says, *tuto, celeriter, et jucunde,* many days sooner than she could otherwise have effected this object by her own unassisted efforts. There are cases of every species of fever which nature alone will cure; there are others which she has no tendency to cure, as all her reactions are for the worse; now if in either of these cases we assist her efforts and retrieve her errors, so that she is thereby enabled to bring the disease to a healthy crisis many days sooner than she could have done so without our aid, surely this may fairly be called "the cutting short of the fever." If we have not done this many hundred times in scarlatina and other typhous fevers, then is it time for us to relinquish both our pen and practice, as no longer competent to either.

But how stop the course of scarlet fever, which, like small-pox and measles, is a disease of a certain duration? True, the mere disease is of a certain and determinate duration, *but the consequences thereof which we may prevent,* often react on the system, prolong the malady, and finally prove fatal.

But to return to our subject of emetics, we are further to observe that tartrite of antimony, given in slightly nauseating doses, is useful in this as in other fevers, when the general strength will bear them. They give the whole disease a centrifugal tendency, promote a moderate exanthema, and by some incomprehensible but well known power they annihilate fever, and that too, very often without any evacuation whatever. Emetics may also be given in many cases to the point of full emesis, several times in the early stages of the disease, for the purpose of ridding the stomach of its foulness, and the bronchi of their suffocating mucus. The tartrite of antimony when the strength will incontrovertibly bear it, is certainly the best emetic in fever; but if there is any hesitation respecting the strength, we should resort to ipecacuanha, or omit this indication entirely.

We are well aware of being here in controversy with many eminent physicians, and particularly with the learned Editor of this Journal, who, believing that scarlatina affects the mucous membrane of the upper portion of the alimentary tube, could not, we presume, be prevailed on to adopt this practice with tartar emetic: but if this medicine be so very deleterious as they suppose, how is it possible for patients to recover under its continual use? Men no more attempt to cure acknowledged phlogosis of the stomach with this medicine, than to extinguish fire with gunpowder; if then, there be a phlogosis, as they

suppose, how is it that this continual feeding of the flame does not increase it? How is it that the fever gradually dies away in so many cases under its continual use? Something may often be learned of the nature of a disease from the *juvantia et lædentia*, and these are our best guide where knowledge is wanting and theory delusive.

Blood-letting. This remedy, in contrariety to our old prejudices, we have found truly useful, and in many cases, we may confidently say, it was indispensable. The extremities must first be warmed, the head cooled, and the excitement rendered as equal as possible over the whole body; if then, the pulse, or rather the system, will bear the loss of blood, the disease will be very greatly mitigated thereby; and if there is coma in the early stage, delirium, intolerance of light, contracted pupil, headache, the approach of convulsions, or any one of these preludes of coming danger, there is hardly any safety without the loss of blood. In the worst cases there can be no substitute, and if it cannot be used, or if it fail, the patient will probably die; there are ten chances to one that you will soon have convulsions, the most fatal symptoms in young children labouring under scarlatina. But the loss of a little blood in this early stage, particularly if it can be followed by tartrite of antimony, either to the point of full emesis or in nauseating doses, or in both these ways, will almost infallibly subdue the disease and render it easily manageable.

It is truly pleasant to contemplate how a little practice will nullify the most inveterate and opiniated theory. There was a time when we busied ourselves in raking up authorities in condemnation of Dr. Armstrong's sanguinary lessons in the treatment of scarlatina, but now we can readily conceive that the disease may exist precisely as that excellent observer has described it. Thus it is, in the language of Tully, that time destroys the fictions of opinion, but confirms the decisions of nature. We have never, however, bled as freely as Dr. Armstrong and others have done, either in typhus fever or in the present disease, with both which we have been very familiar. According to the best of our recollection, we have never bled more than once in the same case, nor indeed have we drawn one drop of blood in more than one half of our patients. This is most clearly a typhous affection, having all the pathognomonics of that sinking disease in which we are justly taught to dread the lancet as generally a great, though sometimes a necessary evil. There is in this form of fever wherever it occurs, a certain incomprehensible tendency to inirritability and death, which appears to be utterly independent of congestion, inflammation, effusion, ramollissement and of every form of disorganization whatever; a tendency which does not obtain in any other fever. This

position we hope no one can pretend to controvert who has been thoroughly conversant with the typhus pneumonoides which pervaded many parts of Pennsylvania, from the year 1812 to 1820. That doctrine which taught the *unity of fever*, must have sunk at once in the mind of every physician who poured out blood in this insidious disease as he had been accustomed to do in a common pneumonia. But to return to scarlet fever; we do not pretend to say but that lesions of the brain, the lungs, the bronchiæ, and sometimes of the fauces, are generally the real cause of death; but merely, that if we deplete in the early stage to prevent these, as we are bound to do for preventing the same in a common inflammation, we shall bring the system under the dominion of the typhous influence, and lose the patient without delay.

As to congestion, a word which physicians seem to understand, however they may differ as to the quo modo thereof, in this state of the patient, attended with cold extremities, hot head, feeble or natural pulse, we cannot bleed with safety. The first thing to be done is to warm the extremities, apply ice to the head, to dissolve this in the fauces and stomach if there be inflammation of the throat or even excessive heat, apply sinapisms freely to the arms and legs, give tartar emetic if the pulse rises. All this we have said above, but here is a proper place to repeat it when preparing for blood-letting. The depressed state of the system, whether from congestion or any other cause, we cannot believe was ever in a single case of our practice to be relieved by bleeding, unpreceded by equalizing excitants. Other physicians have had more penetration, or they have had a far different disease to manage; or perhaps, they may contemplate cases with other prejudices, or use words in another sense.

In *typhus gravior* we have often relieved this depressed state by bleeding; but having tried it in a few cases of *scarlatina* without relief, we entirely abandoned it as a primary remedy. We have often tried to bleed in the congested state of *bilious remittent*, or *marsh miasmatic fevers;* but never in a single instance was a severe case in the least relieved. Such has been our experience in the almost innumerable cases of bilious remittent fevers which has fallen to our lot; the experience of others has been very different. We are now speaking, let it be observed, of bleeding in depression, as practised by some physicians, without previous excitation of the pulse, or equalization of excitement.

Of *local blood-letting* in the scarlatina, whether by cups or leeches, we have no experience. We have opened the temporal artery in a few instances, but the cases were not such as to afford us any satis-

factory result. The operation is difficult in children, since all wounds in this disease ought to be small, and made with one thrust of the lancet, lest they refuse to heal, and finally form a dangerous ulcer. For this reason we forbore to bleed in the jugular vein; for if the wounds here do not close quickly, the consequences are bad, and must be worse than those from wounds in the arm. In one instance of bleeding in the basilic vein, the wound did not heal, a phagedenic ulcer formed, and ere the child died of the subsequent dropsy, this ulcer was at least three inches in diameter. It is this disposition to sphacelation that renders us fearful of leeches, as also of the sixteen wounds within the small compass of the scarificator. Blisters we have never applied for the same reason. Several of my medical friends, at a distance, used them, and in several instances they produced mortification, attended by circumstances of poignant distress to all the parties concerned. There is certainly something in the fluids or solids, or in both, which is highly adverse to the healing of wounds. Stark of Edinburgh, says that in his epidemic, he saw the leeches fall off dead almost as soon as they had pierced the skin. See No. XXXVIII. of this Journal, p. 506.

Dr. Armstrong says, "blisters are sometimes beneficial, but they should seldom be applied in the advanced stage, as they then not only produce general irritation, but are sometimes succeeded by a gangrene of the part." We are truly surprised with this opinion from so careful a writer. "They are *seldom* to be applied," he says, "in the *advanced* stage, for *then* they are sometimes succeeded by gangrene." Did not Dr. Armstrong know, and does not every one know, that blisters are not apt to mortify for the first few days when drawn in any disease, but that it is after some time when the peculiar vivid stimulus of the cantharides has passed away? Now it is that the sores begin to assume the peculiar gangrenous state of the whole system, they cease to discharge kindly, become dry, of a cineritious colour, and altogether irreclaimable; so that when drawn early in the disease, who can say that they will heal in time to prevent this evil? Who can promise when, or how soon a blister shall heal in any disease, much less in this which seems to poison every wound? In our treatment of scarlatina, we have not blistered in a single case; but we have lost two young children by the parents' neglect of blisters that had been drawn to cure pneumonia. They were left uncovered; they ceased to discharge; became dry and of a cineritious colour; depression of the whole system followed, as in an extensive burn; and death was inevitable. Who ever shall draw a blister in bad cases of scarlatina, must be either ignorant or rash to criminality; in mild cases they can-

not be required. Such has been our deliberate and steady conviction; but the opinion of others must have its weight. Huxham says that he has blistered the throat, from ear to ear, with great success. "These applications," he says, "are useful in common quincies, much more so in this where the humours are so exceeding sharp and malignant." Fothergill, Bard, Heberden, Cullen, and others, recommend them; nor is there a more plausible remedy, *à priori,* in the whole catalogue, and we are heartily sorry that they have been proven, *à posteriori,* to be sometimes dangerous.

Blood-letting, however, is our present subject; we have been led into this, we hope, not useless or impertinent digression, by speaking of the wounds therefrom. The advantages of this remedy we conceive might be very great if used early in the disease, in almost every case of an epidemic scarlatina that is known to be attended by troublesome local determinations; and there are very few cases of the disease, either epidemic or sporadic, in which this state of things does not obtain. The tumours of the glands, which often suppurate, attended by great danger and distress, or in milder cases often continue for years; the consequent dropsy, which is highly insidious, and often mortal beyond the reach of medical science; nay, even the anginose state with all its horrors of putrid sore throat; the mortal extension of the disease into the larynx; the alarming spread thereof into the nostrils; the permanent deafness which sometimes follows; all these, we humbly conceive, may be prevented in many cases by early depletion. But so long as parents will not apply in time to prevent these evils, by the only means that afford any hope, so long will they have to lament the imperfections of a science which does not pretend to execute miracles. Yet there are many cases in which depletion appears to have no place even in the earliest stage.

These are, in the *first place,* exemplified by those patients in whom there is scarcely a sign of fever from beginning to end, the disease attacking the throat by a direct sphacelation, or a gangrene with hardly any perceptible inflammation. In some of these cases the system is suddenly brought under the sphacelating, or perhaps rather the typhous influence, and sometimes the disease appears wholly local, the patient walking about with a good pulse. They are, in the *second place,* exemplified in those patients who are suddenly prostrated to such a degree that nature does not react, but requires the steady use of much stimulation to prevent immediate and fatal sinking.

Cathartics.—These, as every one knows, are indispensable, but there is one that is peculiarly useful. *Calomel,* when given in large doses, makes a decided impression on the whole glandular system, promoting

all the secretions, particularly that of bile, and thereby the brain is relieved of its greatest pressure. This communication was not conceived in the spirit of multiplying words; our wish is to be as brief as possible; hence we must not be expected to dilate on a subject so familiar to every one, as the arguments for and against the use of calomel in fever. *Sapientibus verbum*, is at present our motto; suffice it therefore to say that we have given large doses, fifteen grains to a child of three years old, at midnight, after the evening paroxysm had passed over, giving castor oil the following morning, or more calomel, if necessary, so as to have the desired purging accomplished before the return of the evening exacerbation, being thereby ready at this time to administer nauseating doses of tartar emetic.

This calomel generally produced abundant green stools, a most favourable circumstance for the patient; or in other words, that state of the system which is attended by green stools obtained by calomel, is, in all fevers which we have ever known, most highly propitious.

We are well aware that several pages might be written and many learned quotations made, but the intelligent reader, whether instructed by books or in the school of experience, will quickly anticipate all that could be written. We shall, therefore, dismiss this part of the subject by stating that whether in the scarlatina, the typhus fever, or the bilious remittent, which never was nor ever will be typhous, we have followed this practice with decided and incontrovertible advantage, nor have we ever known salivation or any other evil to result therefrom.

There is one misfortune, however, attending this practice. Every one will decide for himself as to the expediency of using calomel at the same time that he is dissolving ice in the throat and stomach. For our own part, we have not had the hardihood to do it, and therefore, in patients who were not old enough to guard against swallowing the melting ice, we have omitted either this or the calomel; nay, even in the older patients, we have recommended the ice to be used very sparingly. In young children the danger is, not so much of a salivation as that the mercurial action may fall upon the alveolar processes, producing caries and exfoliation. For this reason, it is to be considered, which remedy is the most necessary. If the greatest danger is from inflammation of the throat, the ice is to be preferred; if the brain is oppressed and congestion threatened, the calomel cannot be omitted.

We cannot quit this part of our subject without warning our readers, that patients who are taking calomel and tartar emetic in this disease, must be visited often, lest they steal a sinking march

upon us, unnoticed by the nurses. To cure a bad case of scarlatina, is worth our utmost sedulous efforts, and whether the patient live or die, our apparently supernumerary visits will be remembered with gratitude.

Ice and Chloride of Soda. In this part of the treatment we have little to say, except a few words in confirmation of our former experience, as detailed in Vol. XII. p. 261 and 550 of this Journal; but since writing the letter referred to, we have seen a great deal of the practice of other physicians in scarlatina, who thought they were pursuing our practice implicitly and with no little advantage; but we uniformly observed this great fault, that the ice was not used with such freedom as to derive the greatest advantage therefrom. In cases wherein there is danger from the state of the fauces, and wherein the system would bear such sedation, I would permit very little intermission in the application of ice either day or night, till the inflammation has fairly begun to yield. When cold applications are made to an erysipelatous limb, physicians are not accustomed to intermit them for a single moment. It would be consummate folly to lose in the present hour all that was gained during the preceding. If you have repressed the inflammation during the day, it must not be suffered to gain upon you during the night, merely that the patient and his nurses may sleep.

We employ the ice without any gargle, even after the cineritious spots appear, and till it is plain that they are increasing rapidly upon us and the strength is ready to fail. When there are three or four as large as a dime, or one on each tonsil an inch in diameter, the adjacent parts highly inflamed, with the countenance pretty good, and the pulse unsubdued, the ice is still the only necessary remedy. The parts will soon slough out, leaving healthy ulcers, if prevented from increasing by uninterrupted sedation. But in such cases of partial sphacelation, we have derived advantage from using alternately with ice, a solution of sulphate of copper, eight grains to the ounce of water. In such cases the fiery and too common stimulus of capsicum ought to be held in utter abhorrence; there are cases to which this stimulation is truly adapted, but they are the very furthest advanced that are at all within the scope of medical efforts. It may be that nitrate of silver is peculiarly useful in these cases, but we have known it used by others without profit.

In cases of little children who cannot hold ice in the mouth, there is some difficulty. These will sometimes suck a gauze bag containing pounded ice; they may frequently swallow a little of this or of snow; the water from melting ice may be injected into the fauces; which

operation in the case of these young and wayward patients, is our chief dependence. This is a laborious business, and requires energy with perseverance rather unusual. It is well for the physician to do this himself at every visit, in order to show what can and ought to be done; for let him be assured that unless he exhibit energy, hope and confidence, the parents will sink into something like a state of Turkish fatalism or apathy, and will operate only after long intervals, at an occasional moment when hope may predominate or conscience prove troublesome.

The chloride of soda, such as it is found in the shops, must be diluted with from one part to ten of water, according to the age of the patient; but on this point much experience is wanting.

We cannot leave this part of our subject without again cautioning the reader, that he will find some cases in the course of an extensive practice, wherein the ice can have no place, even from the first. Here there is very little perceptible fever, often no exanthema, a pale and shrunk countenance, the tonsils and neighbouring parts deeply gangrenous with hardly any adjacent inflammation, as though they had passed directly from healthy life to a state of death. For such cases there are many remedies of great power. Very frequent gargling with a solution of sulphate of copper, from ten to thirty grains to the ounce; with the chloride of soda; with the capsicum infusion; these may be used in succession and rotation with the internal use of quinine, mineral acids, wine and animal broths as general tonics. This practice is very plain and highly efficacious; without this, or some equivalent corroborant method, the patient will shortly die.

Let the practitioner also beware, that when the patient is brought to a state of debility, whether by disorganization or by the operation of medicines, or by the deadening influence of the typhous *entity*, the further use of ice must be directly pernicious. This state may frequently surprise him no little, if he is not continually on the watch. The feeble pulse, the shrunk countenance, the low temperature, the heavy shrunk eyes, the livid skin; these are signs that collapse is not far distant, and that the case is almost hopeless. This state of things must be prevented, for there is certainly no rational hope of a cure; hence, whenever it is plainly threatened, the tide of life is approaching its ebb and the use of ice must be quickly abandoned, whatever inflammation prevail in the throat. The nature of the disease is such, that patients do not die of disorganizations so much as of that incomprehensible influence which has been called *typhus*, the deadly operations of which on the human body, are greatly favoured by all debilitating causes, and as greatly counteracted

by appropriate tonics, provided that disorganizations do not counteract their just effects and salutary agency.

We shall, no doubt, be reproached for thus speaking of *entities* and *influences* which cannot be referred to internal lesions or to some ascertainable cause. We have stated our opinion, but have no space to discuss the subject. It may be observed by the way, that what cannot be understood must yet be treated of under some name, and that it would be well for those who pretend to assign a cause for every phenomenon, to remember how many *entities* or *influences* there are in the world which cannot be referred to any probable cause, and that Newton himself entirely failed in attempting to explain even one of these, the attraction of matter. But every effect must have its cause; the doctrine of the Epicurean poet, *Nullam rem è nihilo gigni divinitus unquam*, however untrue as it regards the first creation, is yet true with respect to the various operations of nature. Hence, the peculiar phenomena of typhous fever must have their secret cause, which, in our utter ignorance thereof, we may venture to call for the present an *entity* or *influence*.

Ablutions.—We have lately been in the practice of using the *chloride of soda* as an ablution, one part of the medicine to eight or ten of warm water. We do not suppose that it is, as respects the disease, specifically beneficial; but this method of applying the contra-infecting agent, is the best that can be invented. If any contagion come from the pores, it is met by the chlorine under the bed-clothes, while that which comes from the breath can be counteracted by the diffusion of this salutary gas in the air of the room. The benefits of this treatment in the typhus fevers of France and Ireland, do certainly most strongly recommend it in the present disease, which is only another form of the typhous effervescence, often more malignant and more contagious.

We at first gave calcined charcoal as an agent of purification, but now we depend on the chloride of soda. In little children, in whose cases we may be obliged to inject it into the fauces, it may be presumed they will swallow the necessary quantity; but with others it may be given mixed with water. Whether it has any specific influence over this disease, must be left to further experience; meanwhile there are many facts that recommend this medicine as a direct antidote in typhus fevers.

Cold affusion.—Some readers are already surprised that we have thus far neglected this popular remedy. We have used it, times innumerable, in bilious remittent fevers, but never in scarlatina; nor, indeed, would it have been tolerated by most of our patients, owing to its having been very freely used many years before with the effect,

as was *supposed*, of permanently injuring the hearing of very many young persons; nor yet were we very desirous of using so repelling a remedy in an exanthema so ready to retreat to the vitals.

We have thus given the outline of a practice which, in our former sphere, had the universal credit of being eminently successful, in a disease which spread desolation and dismay through a great extent of country, to the north and west of Northumberland, as described by Dr. Rodrigue in his letter already quoted, and by my pupil Dr. Henry Pleasants, in his Thesis, from which I have already made extracts. From this Thesis I shall now transcribe a case as it was drawn up by myself, since it may serve as a useful illustration of a successful practice, including more than three hundred cases, exclusive of those mild cases which are presumed to fall within the curative operations of unassisted nature.

"Some time in last October I was called to a child of E. Greenough, the eminent attorney of Sunbury. The other children had been slightly affected with fever and sore throat, but medical aid had not been thought necessary; and hence this child of seven or eight years old, had not been properly attended to, until the malady had arrived to an alarming height.

"The patient was very delirious; head hot; face flushed; pulse strong, frequent, quick, and tense; lower extremities cold; the whole mouth and fauces, as far as they could be seen, were covered partly with inflammation, and partly with ash-coloured gangrene, which showed no sign of separation; there was no scarlet eruption on the skin; the patient, either from inability or delirious caprice, refused to swallow any thing whatever, and even to utter an articulate sound.

"The indications were, to avert or remove inflammation of the brain, and to arrest the gangrene."

"Her feet were put into warm water, and she was bled largely from the arm. She was then supported in an upright position till syncope was approaching, when she puked freely, and a general perspiration supervened. She soon, however, became hot and dry, when a large bucket of cold water was poured on her head, in a long continued steady stream. This was frequently repeated during the night, and her feet preserved warm."

"With respect to her bowels, as she utterly refused to swallow, they were to be opened as much as possible by repeated enemata."

"To cool her mouth and subdue inflammation, she was indulged in the free use of ice water. This she took from a pitcher as an unsuspected vessel, and she was employed fully nine-tenths of her time in washing out her mouth. She neither spoke nor swallowed, but kept fast hold of the pitcher nearly every moment of her time, as though her good genius prevailed in her delirium, and wisely directed her to this as a means of safety. I should have used ice in my common way, but her delirium prevented me. Cups to the neck, and leeches to the throat, would have been highly proper, but her delirium would have rendered any attempt to apply them utterly abortive."

"The next day she was in every respect apparently the same, except that the gangrene had made an alarming progress, and the pulse was more feeble. The same treatment was continued with the addition of injecting chloride of soda into the fauces."

"This plan of treatment was pursued with vigour, till the amelioration of the case permitted us to relax it gradually. About the fourth day of my treatment, the gangrenous parts began to slough away, leaving a healthy surface, and on the fourth or fifth, she took food and returned gradually to her senses."

"In this case, the chloride of soda, as far as I know, was first used in cynanche maligna, and such were its happy effects, that the progress of the gangrene was arrested in a few hours."

Now for any person so prejudiced as the present writer, to contemplate this case, it seems hardly possible to have saved life by any other known means. Without bleeding *ad deliquium animi,* with the consequent immediate puking and perspiration, she would almost certainly have sunk under inflammation of the brain. This blood-letting could not have been effected with certainty without thoroughly warming the extremities and thus equalizing the excitement. The cold dash, repeated nearly as often as the head became hot, was surely well calculated to repress the rising encephalitis. This sudden evacuation of the stomach could not have been obtained in any other way, as she refused to swallow, neither was there any safe means of exciting a perspiration, which, though temporary, must have obviated a little the increasing inflammation. The practice of bleeding *ad deliquium animi*, so as to bring on puking with a perspiration which may be prolonged by drawing the bed-clothes over the patient's head, so that he must reinhale the same air continually, is, we conceive, the only efficacious method of detracting blood for the purpose of suddenly subduing an intense local phlogosis in the onset of typhous fevers wherein there is little to spare, and wherein too, the operation can seldom be repeated.

In the above case, in which the mouth and fauces were highly inflamed and running into gangrene, it may be fairly inquired, what would have been the effect of the capsicum gargle? Was it ever applicable to such an inflammation? or, to such an inflammation can any thing be more agreeable than the ice water, unless indeed the ice itself, which she would not use in her delirium? Even when the gangrene began to spread rapidly from an excess of surrounding inflammation, could there be a more plausible remedy than ice, as it could operate only on the living parts which were gradually dying of an excess of *calor, rubor, dolor, tumor?* If we say that the chloride of soda was useful when the gangrene began to predominate, we merely state an apparent fact, and refer to experience. This experience we have had

Fig. 1.

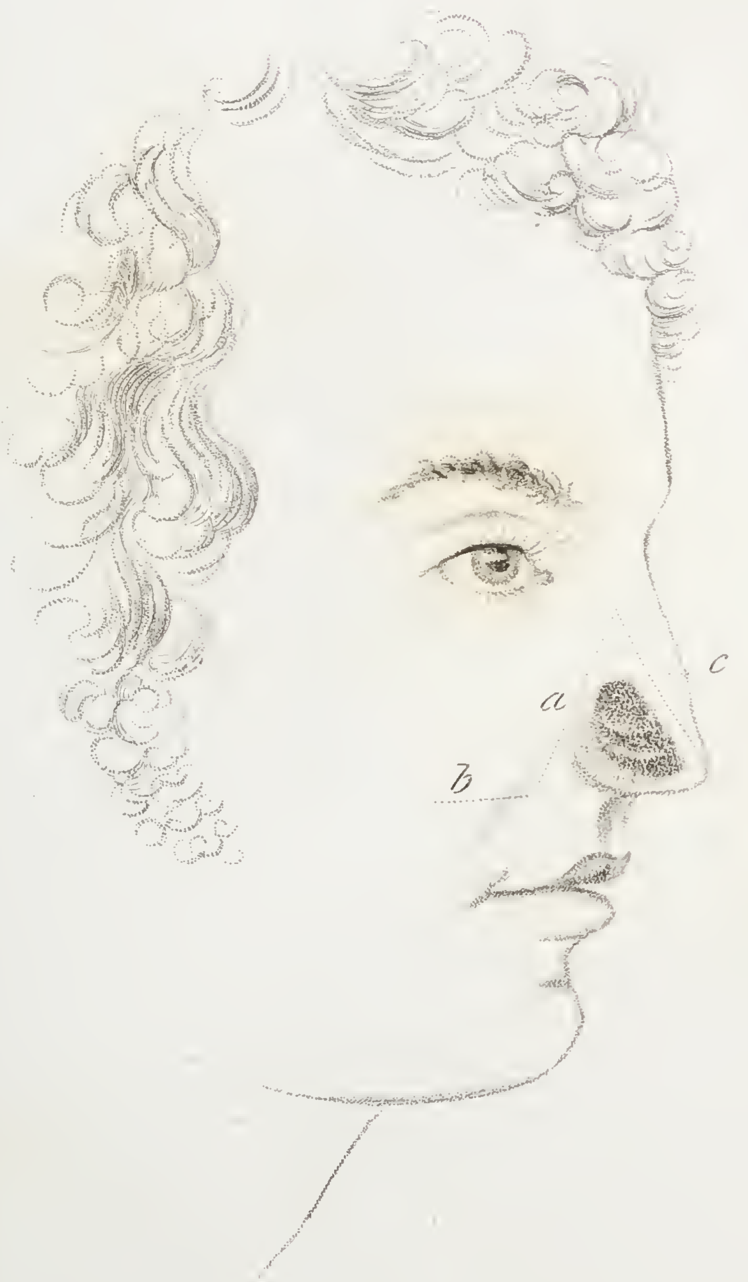


Fig. 2.

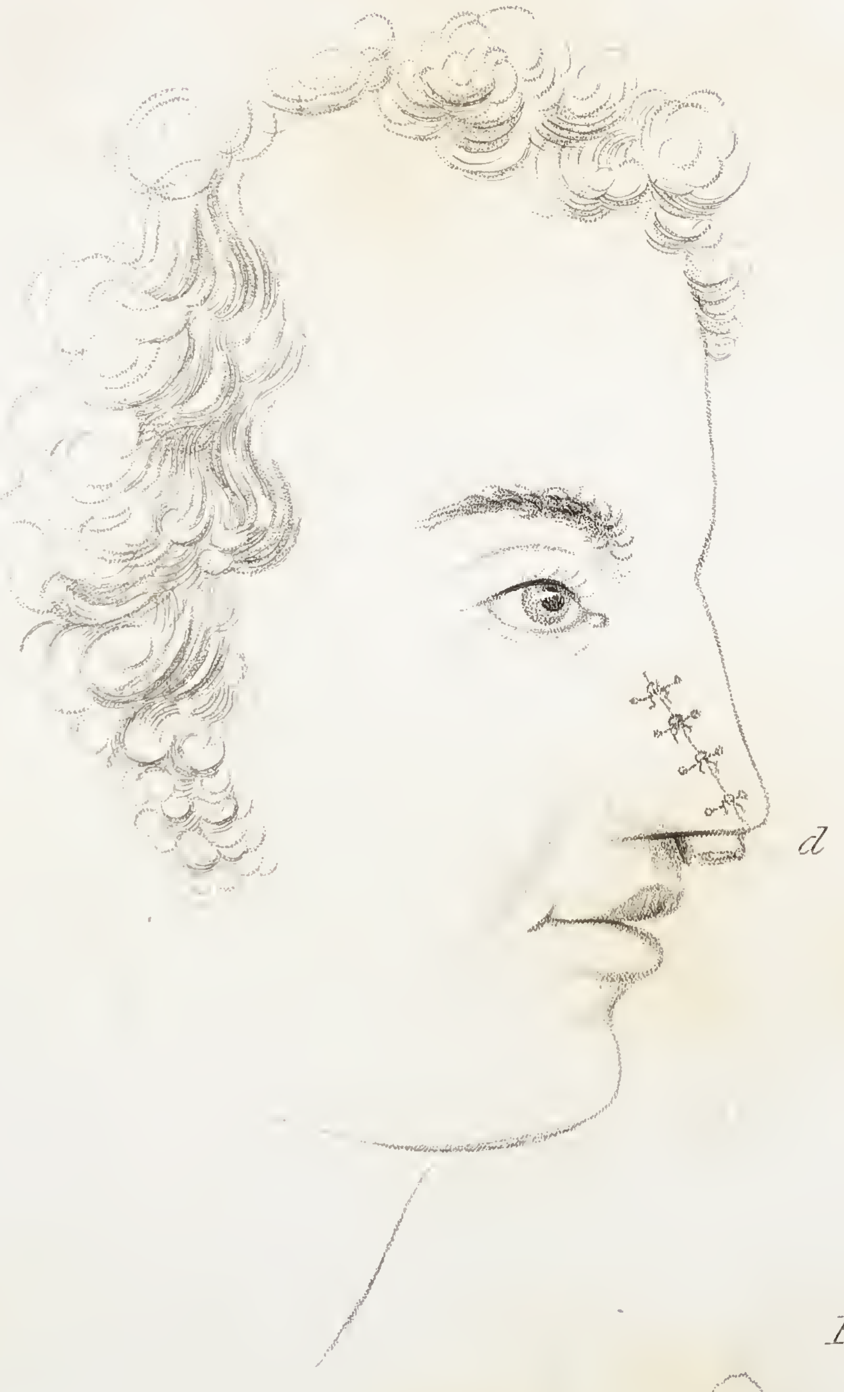
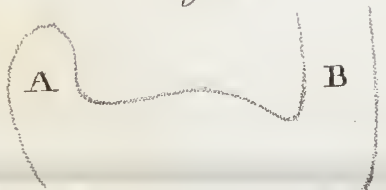


Fig. 3.

Fig. 4.



in very many cases, others have used it also with very great success, to which we may add, that the general voice is very strongly in favour of its use in nearly all gangrenous lesions.

Philadelphia, February, 1838.

Art. IV. *Rhinoplastic Operation.* By Thomas D. Mütter, M. D., Lecturer on Surgery, &c. [With a Plate.]

About the 1st of October, 1837, I was requested by Professor Jackson to visit, in consultation, a gentleman from the South, who had had the misfortune to lose a considerable portion of the right half of his nose.

Without entering into a history of the case, which would have but little bearing upon the operation to be described, I shall proceed at once to state the character of the deformity, and the means employed to accomplish its cure.

Upon reference to *Pl. I., Fig.* 1, it will be seen that the whole of the right ala, as well as the adjacent soft parts, as high up as the os nasum of the same side, are wanting. As a consequence of this loss, an opening half an inch in its *perpendicular* diameter, and about three-quarters of an inch in its *transverse,* at the widest part, and of the shape represented in the sketch, was established. The margins of this opening were thin and callous, while the neighbouring tissues, to the distance of two or three lines, were much paler and firmer than natural, owing to the deposite of lymph, during the period of inflammation to which they had recently been subjected.

The septum nasi, the os nasi, and the Schneiderian membrane were perfectly sound. The face was rather full, and its integuments healthy, with here and there a small cicatrice, the result of previous local inflammation.

As the deformity was striking, and as the deficiency of nostril on one side modified the voice, so as to render it rather disagreeable, the patient determined to submit to any operation that promised success. His general health, though delicate for some years past, is at the present moment excellent; while his age, (28,) and temperament, (sanguine,) rendered our prognosis, respecting the results of an operation, very favourable.

Not wishing, however, to take the whole responsibility of an opera-

tion, so serious in its bearings, upon myself, I requested the consultation to be extended, and accordingly Drs. T. Harris, J. Randolph, and J. R. Barton were called in.

Upon an attentive examination of the deformity, it was determined to attempt its relief by an operation differing essentially from those proposed by the surgeons who have devoted their attention particularly to the autoplastic department of surgery. The details of this operation I shall now present. It was performed on the 6th of October, at 12 o'clock, in the presence of Drs. Jackson, T. Harris, J. Randolph, J. R. Barton, P. B. Goddard, and Langley.

The patient was seated with the organ to be operated upon exposed to a good light, while his head was slightly thrown back, and supported by Dr. Randolph. Seating myself in front, I commenced the operation by making, with a small sized convex edged bistoury, an incision extending from a few lines above the *superior* border of the orifice, to a short distance *below* its inferior, and directed *downwards* and *outwards.* (See *Pl. I.*, *Fig.* 1, *a.*) It did not penetrate to the bone, but was sufficiently profound to allow a flap about *three* lines in thickness to be readily detached. Upon reference to the plate it will be found that this incision was completely on the *outside* of the cicatrice, a portion of which was subsequently removed in order to prevent its hardened edges from irritating the raw surface of the flap, which was to be placed immediately upon it.

One or two small arteries were cut across, but the hemorrhage from them was arrested by pressure, until the *second* incision was made. This commenced at the *terminal* extremity of the first, *and extended horizontally outwards about an inch.* (See *Pl. I.*, *Fig.* 1, *b.*) A *triangular* flap was thus marked out, and immediately detached from the subjacent bone, by dissecting with the edge of the knife held nearly parallel to the surface of the cheek. In the execution of this part of the operation, two or three arteries of some size were necessarily cut across, and required the application of the ligature.

The *third* incision, which extended from the *initial* extremity of the *first* to the point of the nose, (See *Pl. I.*, *Fig.* 1, *c.*) was made with a pair of strong straight scissors, these being preferred to the scalpel, in consequence of this margin of the orifice being, to a certain extent, loose and unsupported. The triangular piece of cicatrice included between the superior extremities of the first and third incisions, was then removed with the scalpel and forceps; and the sharp margin of the inferior portion of the opening also pared off, for reasons already stated.

The hemorrhage having been arrested, and the parts properly sponged, the next step of the operation was undertaken. This con-

sisted in the approximation of the 1st and 3d incisions, and the application of such measures as were calculated to retain the flap in its proper position. From the free dissection, and the yielding character of the subcutaneous cellular tissue of the cheek, no difficulty was experienced in placing the edges in contact, and in order to insure their perfect and close approximation, *four* stitches of the *interrupted* suture made with saddler's silk, waxed and doubled, were passed, (see *Pl. I.*, *Fig.* 2.) In addition, two or three small adhesive strips were applied to the spaces between the sutures.

Finally, in order to prevent adhesion between the *flap* and raw surface beneath it, and to give a better shape to the former, a small roll of soft lint, well oiled, was introduced into the *new nostril.* (See *Pl. I.*, *Fig.* 2, *d.*)

The patient bore the operation, which was necessarily tedious and painful, with remarkable firmness. He was ordered tinct. opii. gtt. xxx; to be kept perfectly quiet, and to lie with his *head elevated.* The temperature of the room to be 50° Fahrenheit.

October 6*th, afternoon.* Four hours after the operation we paid our patient a visit, and found with much satisfaction, that he had passed a very comfortable time. The temperature of the flap was a little *above* that of the rest of the body, but this increase of temperature was not accompanied by *pain.* The pulse was a little excited, but the reaction could scarcely be considered *febrile.* Strict injunctions were left with the assistants relative to the *position* of the patient during the night.

7th. Passed a good night; complains of a little *stiffness* and *soreness* in the parts. The flap was still somewhat *warmer* than natural, though its *colour* was not deepened. Slight oozing of a bloody serum from the lower part of the wound; pulse natural; tongue coated with *white;* bowels costive; slight thirst and anorexia; ordered ol. ricini ℥j., to be followed if necessary by a laxative injection; *diet,* iced lemonade, barley water, or tea and toast; room to be kept *quiet* and *cool,* and in case of fever's occurring, spts. ether nit. ʒj., to be given in a little cool sweetened water.

8th. Slept well; flap more painful, and slightly erysipelatous; discharge of bloody serum more copious; pulse *natural;* tongue cleaner; appetite better, and less thirst; medicine had operated freely; ordered the flap to be bathed with tepid mucilage of medul. sassafras; diet, &c. the same as yesterday.

9th. Pretty much as yesterday; flap still slightly erysipelatous, but *less painful;* continue same treatment.

10th. At 12 to-day, in the presence of the consulting surgeons, the

dressings were removed; *union by the first intention* has taken place throughout, and is sufficiently firm to bear the removal of the sutures; granulations have sprouted from the lower margin of the flap, and extend some lines below the tip of the nose. Healthy pus was discharged in considerable quantity upon the removal of the plug from the nostril; flap appears much as it did at the previous visit; tongue clean; bowels open; no thirst; pulse natural; reapplied adhesive strips and plug; ordered poultice of cort. ulm. americ. to the nose; diet, &c. as before.

11th. Slept well; flap wears a much more healthy aspect, slight inflammation, however, still remains; discharge of pus from beneath the dressings; no *pain* or *stiffness* in the parts; pulse natural; secretions normal, &c.; continue same treatment. The antiphlogistic system was pursued for the period of two weeks, the treatment varying only in some minor points from day to day. During this period, the ligatures of the arteries were discharged, one of them ulcerating through the flap, but it occasioned no inconvenience of any kind. About the commencement of the *third* week, it was determined to remove the granulations from the lower margin of the flap, and at the same time give it a proper curve. This was accordingly done, by means of a pair of strong curved scissors.

In consequence of the *contraction* of the flap, the septum nasi was caused to incline to one side, which deformity was made very evident by the removal of the granulations.

In order to remedy this, the *line of union between the base of the flap and the cheek* was divided, cutting from within with a small scalpel held parallel to the surface of the cheek, to the extent of three or four lines.

The plug was then increased in size, and introduced into the nostril, while a wide adhesive strip was carried from the tip of the nose across the cheek on the sound side, and attached just in front of the ear, in order to incline the septum in this direction as much as possible.

No bad consequences resulted from this operation, and the antiphlogistic system to a certain extent, was still pursued for a couple of weeks longer. The patient's diet, however, had been somewhat improved, and he had also been allowed to move about the house. The use of the strap across the cheek was discontinued, in consequence of its invariably producing irritation of the skin. It moreover exerted but little influence in straightening the septum. The plug, during this period, had been gradually increased in size, with the view of *distending* the nostril, as well as to give it a proper "*set*," and the

granulations within which were very luxuriant, touched twice a day with a weak solution of the nit. argent. or creosote, and occasionally with solid caustic; at the end of the sixth week from the day of the first operation, it was determined to execute the "third step" in the treatment. This consisted in the division of the skin and cellular tissue at the base of the flap in a *semi-circular* direction, the convexity of the curve looking outwards. The object of this incision was to give the peculiar rounded margin of an original ala; to diminish the fulness of the cheek where the natural depression should exist, which depression had of necessity been destroyed by the tension of the flap, and to permit a return to the perpendicular position of the deviated septum nasi. The incision was made with a small scalpel, and extended to the depth of three lines. In order to prevent union of its margins, a small roll of oiled lint was introduced into the cut, and a strip of adhesive plaster applied to the tip of the nose, and fastened on the cheek of the sound side. (See *Pl. I., Fig.* 3, *a*, for shape of incision.) The patient was ordered to confine himself to his room, and to reduce his diet.

On the third day the dressings were removed, and it was found that the margins of the incision were nearly cicatrized and beautifully rounded off.

The same dressing was reapplied, and the plug intended for both incision and nostril increased in diameter. No change of importance was made in the dressing, or in the subsequent general treatment, except that the patient was allowed to return to a more generous diet, and to take exercise in the open air. At the expiration of the eighth week the nose presented the appearance exhibited in *Pl. I., Fig.* 3. The contraction of the granulations had caused the margin of the flap to be rounded off, and the cicatrice resulting from the union of the first and third incisions, which was originally located nearly upon the dorsum nasi, to descend nearly to the cheek. This latter change was a very favourable circumstance, as it produced a depression in the exact spot at which it was required, in order to give a proper expression to the face. Had it not taken place, there would have remained *a sort of inclined plane* from the bridge of the nose to the outer portion of the cheek. At the expiration of the ninth week, my patient returned home with scarcely a vestige of his deformity remaining. There existed a slight deviation of the septum, but this was perceptible only on close examination, and in all probability will gradually diminish, as the tissues of the cheek regain their original elasticity. There was also a slight discharge of mucus and pus from the nostril, owing to a few of the granulations being still uncicatrized.

The nostril itself is perfectly open, and its orifice nearly of the shape of its fellow.

The flap presents the usual colour of the skin of the face, and is so firm that the patient unhesitatingly made use of it in the ordinary operation of cleansing the emunctory. In short, as was remarked by one of the attendants, "so perfect is the cure, that no one would ever imagine that an operation had been performed upon the organ." The voice was also rendered natural.

Remarks. With those familiar with the divisions of modern "*Autoplastie*" the operation just detailed will readily be recognised as belonging to that, in which the loss of original tissue is supplied by *sliding a portion* of *neighbouring integument* over *the deformity*, (*operation par glissement du lambeau.*) For the *principle*, the profession is indebted to Celsus.

In cases similar to that of my patient, there cannot be a doubt of the vast superiority of this operation over all others hitherto performed, and the wonder is, that it has never, so far as I am able to learn, been earlier resorted to. Dieffenbach, Graëfe, Labat, Dupuytren, Blandin, Liston, and every other authority, ancient as well as modern, that I have consulted, make no mention of such an operation for *such a case.* The *principle* it is true, has been applied to other cases of deformity; for example, a fistula of the male urethra was cured by Alliot, by "*sliding* a portion of sound skin over the opening, and then uniting it by sutures to the surrounding parts." Chopart, Roux, Roux de Saint Maximin, Lisfranc, Velpeau, Blandin and others, have also made use of it in a variety of cases, but more especially in ulcers of the *cheek* or *lips.*

The mode of relieving the deformity created by the loss of one ala nasi, has heretofore consisted in the section of a flap from the cheek, the *pedicle* of *which* rests on the *margin* of the *wound. Torsion* is resorted to, and the *flap* attached to the septum, &c. by suture or strap. Another plan, practised especially by *Liston*, and the English generally, has recently been published. This consists in the section of a flap of the form represented in *Pl. I., Fig.* 4; and is altogether a better operation than the one usually performed. There is here no *twisting* of the pedicle; "The coaptation of the flap is consequently more exact, the supply of blood more free, and the vitality of the part less endangered."

A, Form of flap on cheek; B, the slip of attachment. It is evident that by simply bringing A into a straight line with B, the flap may be placed in apposition, without any twisting of the attachment; the acute angle between the two being entirely removed by the change.

Another operation, for this deformity, where the cheek is *spare* and *shrunk,* has been successfully performed by Liston. The flap is taken from the forehead.

"This is done," observes Mr. Liston, "in the same way as for restoration of the whole nose; but a variation is expedient when the organ is of unusual length. Then the long and narrow connecting slip, if treated in the ordinary way, would be so indifferently nourished, and so ill supported that the vitality of the transplanted part would be endangered. To obviate this, a deep incision is made along the ridge of the nose, continuous with the wound in the forehead at that side to which the twist is to be made. This longitudinal incision is, by a little dissection with the point of the knife, widened sufficiently to contain the connecting slip from the forehead; and into the groove so formed the slip is laid and retained, until firm union of the whole flap has taken place. When this has occurred, which may not be until after a week or two, the slip is again raised by incision, and cut off close to the adherent flap. The wound in the ridge of the nose is then united by suture."—*Practical Surgery, p.* 233. *London:* 1837.

It is evident that in all these plans, a wound of greater or less extent must be made in the *cheek* or *forehead,* the cicatrice of which gives rise to considerable deformity. But in addition to the inevitable occurrence of deformity, another objection of much moment presents itself against the *first* and *last.*

Every one familiar with operations is aware, that when a part is *twisted,* or caused to deviate from its *natural* direction, to such an extent as to occasion an *impediment* to a *free circulation* of blood through it, *gangrene* is *very often,* though *not invariably,* the result. Hence the great difficulty in the rhinoplastic operations, where a flap is taken from the forehead or cheek, and *torsion* resorted to.

In the operation I have performed, both of these difficulties are done away with. There is no *scar* on the face, or at most one scarcely perceptible, and no *torsion* of the flap being required, union by the *first intention* is almost a "thing of certainty." The free supply of blood to the flap is also another circumstance in its favour.

Such is the laxity of the cellular tissue of the cheek that no difficulty whatever is experienced in the approximation of the parts. The only *objection* to this operation is, that unless the *incisions* are carried *outwards* sufficiently far, the subsequent *contraction* of the flap may cause a deviation of the septum nasi; but this can scarcely be termed an *objection,* inasmuch as it is always subject to remedy.

It is, I am aware, *unsafe,* if not *unwise,* to attempt the establishment of an operation as a "*standard,*" upon the successful termination of a *single* trial, but so clear is the *principle,* so *simple each step,* and so *satisfactory* the *termination* of the one in whose favour I am enlisted,

that I think I may with perfect security recommend it to the favourable notice of the profession.

The objection to taking a flap from the *cheek*, as advised by Mr. Liston, is the production of a *scar* of some magnitude.

One or two interesting physiological points connected with autoplastic operations in general, and which are still "matters of dispute," deserve a passing notice.

It is stated by Lisfranc, Blandin and others, that in all cases of "Autoplastie," there exists for some weeks after the operation, a *perversion* of *sensibility* in the flap, or in other words that an impression made upon the flap (such as the prick of a pin for example,) is not referred by the patient to the point of its reception, but to the part from which the flap has been removed. Dieffenbach contends that this is altogether a mistake, and remarks that, "in all his experience (which has been most ample), nothing of the kind has ever been met with." Liston and others state, that "perversion of sensibility is not by any means so common an occurrence as many assert," though it may occasionally happen. In the case just recorded, there certainly did exist, for a few days only, however, something like it; for example, a fly resting upon the *nose*, caused the patient to brush his *cheek*, &c. But here the nervous communication between the parts was so *direct* and *extensive*, that we are at no loss to account for the phenomenon.

Another statement made by most writers upon the subject, is, that when the flap has been taken from a part naturally covered with hair, the hair-bulbs in the transplanted parts, either dry up, or secrete a very *fine, silky,* and *light coloured down*, altogether different from the original hair. *Jobert* denies this assertion, and says that the hair, though somewhat lighter in colour, nevertheless continues to grow as luxuriantly as before.

In my case, the flap extended into the bearded portion of the upper lip, and *two months* after the operation, this beard *continued to grow*, whether or not it has since disappeared I am unable to say.

In all cases of successful rhinoplasty, the granulating surface of the flap becomes in time converted into *mucous membrane*, and enjoys to a certain extent the function of this membrane in an original organ, the *sensibility* is not however as acute; in my case this change has been fully accomplished. Within the last few days I have received a most gratifying letter from my patient, a brief extract from which I introduce; it bears date four months after the operation.

"Dear Sir,—After a very pleasant trip in fine weather, and some intentional delay on the road, I arrived home in safety about a fortnight since. I

suffered no injury from travelling. Since my arrival, I am pleased to say to you, that the wound on my face has *entirely* healed, both *inside* and outside the new formed ala. The new skin internally, is *entirely sound* and *healthy*, and all swelling has subsided. The scar on the face is hardly observable, and the adjacent parts have accommodated themselves, as well as I could expect, under all the circumstances, to the altered condition of the nose and cheek. The nostril appears natural but not quite large enough; and there seems to be a disposition in the part still farther to contract, though I hope it may eventually be overcome."

"N. B. My general health is very good, and I am as actively engaged in business as ever."

I have no doubt whatever, but that in the course of a few months, all "*tendency to contraction*" will be overcome.

Art. V. *On the Theory of Inflammation.* By Martyn Paine, M. D., of the City of New York.

Having formerly trusted to the general accuracy of microscopical observations, we were disposed to conclude that there is a languid state of the circulation in inflammatory affections. Still we could as little reconcile the phenomena of inflammation with the principles of mechanical or chemical philosophy, as those analogies that are supplied by other diseases. We, therefore, were irresistibly led to revert to the laws that govern living matter, whenever we attempted an explanation of its results, or of the modus operandi of remedies. These difficulties brought us to a more critical examination of the subject, which has resulted in restoring our confidence in the Hunterian theory.

The objections against the new doctrine appear to be its inadequacy to explain most of the phenomena, whilst it seems to us to be contradicted by the principles upon which it is founded. As we have nothing in other respects new to offer, we shall confine ourselves, mainly, to a consideration of the obstacles presented by the theory itself.

Having satisfied ourselves of the suspected illusions of the microscope, when employed in minute investigations where the vital powers and actions mainly reside, we turned our attention to the results that had been obtained from this instrument by different observers. We found but little agreement amongst them, excepting as to the dilatation of the vessels, and an increased volume of blood; and even the latter

phenomenon, like pain, is a contingent result, and not a necessary element of inflammation.

We shall take Mr. Earle's very lucid digest of the existing doctrines of inflammation* for our guide; and shall consider that part of the theory of passive relaxation, which he has propounded in regard to the products and supposed terminations of inflammation, as irresistibly resulting from the fundamental principles of the doctrine. We do not, therefore, advert to Mr. Earle personally, but merely as the representative of an important hypothesis.

That part of the doctrine which regards the essential condition of the vessels immediately concerned in the process of inflammation, supposes,

1st. A passive relaxation of the vessels, a suspension of their natural action when they are supposed to possess any, and an increase of their diameters.

2nd. A progressive accumulation, stagnation, and coagulation of the blood within the vessels.

It may be proper to state here, in the language of others, a summary of the whole doctrine, as we believe it to be generally received.

"The observation," says an enlightened writer, "which I have quoted from M. Gendrin, when taken in connexion with the facts previously stated, simplify the theory of inflammation, and satisfactorily explain the alliance of all its leading phenomena. The initiatory effusion of serum and lymph, dependent upon the visible obstruction of the circulation; the lymph with attenuated inflammatory fibrine; the consequent occasional mixture of blood with lymph; the formation of pus, secondary to and later than the secretion of serum and lymph, being the result of protracted inflammatory action; the solid particles in pus, although larger, yet of the same remarkable figure with those of the blood, and doubtless the same enlarged; the occurrence of blood in pus mixed with it in streaks, or generally diffused through it; the organization of lymph by extension of vessels, some at first containing pus, others a thick red liquid; and, lastly, inflammatory gangrene, proceeding from the vessels being, in certain cases, irrecoverably obstructed; are phenomena which may be declared to be now grouped under one law."†

By another it is said, "the circulation is completely interrupted in inflammation, the blood coagulates, clogs the vessels, &c."‡

We believe that all of this school concur in saying, that the vessels become more and more obstructed with coagulated blood as inflammation advances, and less and less capable of any independent action.

3d. Besides the foregoing conditions, there is an enlargement of

* London Medical Gazette, Vol. XVI.

† Mr. Mayo's Outline of Human Pathology, p. 431.

‡ Cyclopedia of Pract. Med. Art. Inflammation, p. 713.

the collateral vessels, proportioned to the redundancy of blood transmitted to the part, occasioned by its presence and the force of the vis a tergo.

4th. That the blood is propelled through the collateral vessels by the action of the heart; though all do not assent to this proposition.

5th. The vessels being thus paralyzed in their action, and mechanically obstructed, can perform no part in generating the products, or in what have been called the terminations of inflammation; and thence follows the corollary which is peculiar to Mr. Earle.

It is due to ourselves to premise, that we are fully sensible of the responsibility we have taken; and, that whatever we may say, irresistibly flows from the nature of our argument and from no disposition to offend where it is our highest ambition to entertain the most profound sentiments of respect. "It is not so much the present writer who speaks as the facts themselves."

It appears to be universally admitted, that in parts which carry red blood, a preternatural quantity is transmitted in inflammations, either through the vessels inflamed, or through the collateral vessels. This has been demonstrated by Mr. Lawrence.*

It is, also, candidly admitted by a strenuous advocate of the new doctrine that,

"In opposition to the hypothesis of direct debility of the vessels, the exciting causes and treatment of inflammation coincide better with the idea of excessive, than of defective action."†

That a preternatural quantity of blood circulates through the diseased vessels appears from many facts. The most familiar is the profuse hemorrhage which often follows the application of leeches to an inflamed surface, and its florid colour. Objections have been made by many physicians to scarifications in erysipelas, on account of the great hemorrhage to which they are liable. In phlegmon the blood flows from incisions with increased force. If the blood of an inflamed part be expelled by rubbing, it will return with unusual velocity. The preternatural generation of heat is, also, another proof of our conclusion.

A passive dilatation of the vessels, supposes a cause that facilitates the transmission of blood. Nor is there any obstacle surmised that shall either counteract the effect of the enlarged diameters, or oppose the circulation before that enlargement takes place.

Concurring, also, with the foregoing cause in promoting a free cir-

*On Diseases of the Eye, p. 64.
†Cyclopedia of Pract. Med. ut supra.

culation of the blood, is the more attenuated state of this fluid i inflammations, and its diminished tendency to coagulate.

But, it is said, in opposition to mechanical laws, upon which th theory mainly rests, that the blood stagnates in the enlarged vessels and this in proportion as their diameters become increased, althoug the blood is urged on by an increased force of the vis a tergo. It i then said to undergo coagulation; for it must first stagnate befor coagulation can take place; notwithstanding, also, that the blood ma be not only thinner than natural, but less disposed to coagulate.

This, however, is only the beginning of the conflict of the mechan- ical laws. There is a preternatural volume of blood determined to- wards the seat of inflammation; sometimes at least thrice the usua quantity. This is said to find its way through the collateral vessels Of course, it must begin to enlarge these vessels before stagnatio commences in the diseased vessels; otherwise, the diseased vessels, being passively dilated, would permit the redundant blood to follow their channel, and no stagnation could happen. Besides, it is dis- tinctly denied that any redundant blood passes the diseased vessels at any time; whilst it is admitted that the volume of blood determined towards the inflamed part is increased from the beginning.

But suppose the stagnation begins first in the dilated vessels. The philosophy, then, will be scarcely any better; since in either case, the dilatation of the diseased vessels must be supposed to constitute an ob- structing cause to the circulation. In the latter instance, it is true, the stagnated blood is a cause superadded to the enlarged diameters of the diseased vessels. But this hypothesis supposes, also, that the superadded cause must be adequate, in connexion with the former, to overcome the resistance that is opposed by the tonic and elastic pro- perties of the collateral vessels, and thus enable the increased volume of blood to dilate and force its way through the vessels that are strong- ly contracted by their natural forces.

The process of inflammation, according to the theory which we are examining, appears not to have been traced beyond its primary stage, until Mr. Earle took up the principles on which the doctrine is found- ed, and explained the manner in which the various results take place It appears to us, as we have intimated, that Mr. Earle's exposition is in perfect conformity with the laws that are supposed to operate in the introductory stage, and that the whole theory is perfectly consisten and unavoidable in all its parts.

It is, therefore, contended that serum and lymph arising from in- flammation, are mere exudations from the blood; and as to pus, Mr. Earle thinks that "the opinion of its being a secretion cannot be ad-

mitted without carrying our deference to Mr. Hunter's authority to an unwarrantable extent."* And since the laws of life have no connexion with the formation of pus, it probably consists of some component part of the blood; and this is consistently supposed to make its escape in a purely mechanical manner.

Mr. Earle has illustrated this subject by comparison.

"Would it be a matter of astonishment," he says, "if the several parts of a fluid like the blood upon being pressed through an excessively fine sieve, were to come through in the order of their fluidity; that is, the finest and most fluid first, and the largest and coarsest last."†

Lest this hypothetical illustration might seem to be conclusive, we have seriously put it to the test of experiment. But every species of the finest texture, which was permeable by the serum, admitted, also, the passage of the red globules.

But we have seen that the vessels are clogged up and rendered impermeable, at least to the grosser fluids, by coagulated blood; and without a chance, from the want of vital action, of relieving themselves. This must be especially the case considering

"The impossibility of detecting any pores, or openings in the sides of the minute real vessels, the impossibility of the processes of nutrition and absorption being carried on through the coats of the vessels;" and, that "there are no new vessels formed, nor any new disposition of the old, which can be termed glandular."‡

In this condition of the vessels, therefore, it is difficult to understand how even so thin a fluid, as serum, should find its way from the extremities of the vessels, especially in any remarkable quantity. We might, perhaps, draw for our conclusion upon analogies in more precise sciences. For instance, if we stop up the end of a tube, the water can no longer make its escape. But we do not wish to go beyond the phenomena of living matter.

But besides this mechanical obstruction, the effusions, as well as the hypothesis, have to contend with other obstacles. In a wound "there is a thin layer of parenchyma," it is said, "between the external air and the blood in the subjacent vessels, which is sufficiently dense to prevent the egress of blood as blood; but it cannot prevent its exuding in detail." Then it is hypothetically stated, as we have seen, that the parts of a fluid, like the blood, upon being pressed through an excessively fine sieve, would come through in the order of their fluidity, the finest first, the coarsest last. But we have already shown, that although this be true in respect to a sieve, and the object for which it is em-

* London Medical Gazette, Vol. XVI. p. 136. † Op. Cit. p. 141.
‡ Mr. Earle, ut supra, pp. 8, 142, 168.

ployed, it does not hold good in regard to the blood. Could we have endowed our sieve with the laws and actions of life, we have no doubt that we should have made out the parallel. The conclusion, therefore, was forced upon us, that the simile is defective from the defect of the sieve in those endowments. But we leave this matter to be settled by farther experiments, and pass on to other difficulties.

After the serum has strained its way by the force of the heart alone, as is also stated, through the vessels that are clogged up with stagnated blood and the external layer of parenchyma, and whilst also, according to the doctrine, the blood has become still more stagnant in the extreme vessels, coagulable lymph, a much grosser part of the blood, begins to follow its pioneer. But here we think the order should have been reversed, if mechanical philosophy is to resolve the phenomenon.

"The surface," it is said, "now becomes covered with an amorphous deposition of coagulated fibrin, and becomes thicker, so that a greater impediment exists to the extrusion of the globules than before." But it forms no impediment to the globules of pus; for it is said, "the fluid now becomes thicker, and assumes the appearance which is known by the name of pus."*

And notwithstanding all these increasing obstacles, purulent matter is often poured out in a torrent, altogether exceeding the primary effusions of the more attenuated parts of the blood. Indeed, the size of the globules of pus, which are stated by many to be greater than the red globules, though not so considered by Mr. Earle, and the increased thickness of the stratum, are supposed to facilitate their escape.

"There are two reasons," says Mr. Earle, "why the globules are the last to be effused upon the surface of a wound. The first is to be found in their size, the second in the deposition of lymph, by which the thickness of the stratum through which they have to pass is increased." And again it is said, "the passage of the blood to the central point of the inflamed part, which was at first perfectly free, now becomes gradually *more and more* obstructed and difficult. As this happens, the globules lose their colouring matter in passing through the tissue thus thickened."†

But what strikes us as a far greater defect in this application of mechanical principles, is the arrest of the serum, or "finest and most fluid part of the blood," after "the largest and coarsest" parts have opened a channel for themselves. It should be also recollected that M. Donné has ascertained that the globules of pus are twice the size of those of the blood;‡ and this *analogically* should be the reason why the globules of *blood* do not make their escape.

* Mr. Earle, Op. Cit. pp. 141, 142. † Op. Cit. pp. 142, 188.

‡ Archives Générales. Août. 1836.

Again, following up the idea suggested by the sieve, Mr. E. accounts for the removal of the colouring matter from the globules of blood in their conversion into pus, upon the ground that, "it is certainly possible that it may be merely mechanically wiped off in their progress;" and this opinion is variously enforced.* But it will have been seen that this is contradicted by our experiments, notwithstanding we employed almost impermeable sieves and strainers, of incomparably greater firmness and resistance than the capillary blood-vessels.† It should also be considered that effusions of pus sometimes continue for months and for years.

How far friction can operate in the way supposed, may be inferred from Leeuwenhoek's estimate, that a globule of blood is only equal to $\frac{1}{25000}$ part of a grain of sand; and, that by Haller's, Wollaston's, Kater's, and Young's measurements, it would take about 10,000,000 of globules to make a square inch. Hewson saw thousands of them in an insect whose entire bulk did not exceed a pin's head. It should be recollected, too, that this wiping by the blood-vessels is contradicted by Mr. Earle's own showing; since, in rejecting entirely Mr. Hunter's theory of absorption and ulceration, he supposes that the surrounding tissues are broken down by the force of the vis a tergo;

"The *first effect* of inflammatory infiltration being to destroy the original firmness and tenacity of every tissue in which it occurs, so as to cause it to be readily broken down and give way upon the *slightest pressure.*"‡

It is, therefore, the more difficult to imagine that degree of mechanical resistance or friction that must be necessary to detach the colouring matter from the globules of blood. And here we may remark, that since the vis a tergo is sufficient to break down all tissues, and is thus supposed to force an abscess to the surface, it is not a little singular that such a power should not occasionally force some of the red globules into this unresisting matrix.

But if the colouring matter be wiped off, as supposed, what should prevent each succeeding globule of pus from *pushing it out of the vessels?*

* Op. Cit. pp. 142, 188, 219. This is analogous to an opinion entertained by some, that the absorbent glands supply the central particle of the red globules, by straining it off from the lymph or chyle.

† According to Sir E. Home, the colouring matter is easily removed. But he made no experiment. The colouring matter was manifestly washed off by the moisture that collected upon the sustaining glass. (*Philosophical Trans.* 1818.) Besides, it has been shown by Hodgkin and Müller, that the colouring matter is only disposed to leave the globules when water is applied. (*Pogendorf's Annals, T.* 25, *p.* 513.)

‡ Op. Cit. p. 189.

Suppose, however, that Hodgkin, Liston, and others, are right in their statement that the globules of pus are formed from a gelatinous fluid that is first effused, it would be equally fatal to the hypothesis we are considering.

It appears to us, that not only the exclusion of the red globules from the suppurating vessels, but also from the serous and lymphatic vessels, may be most philosophically explained upon vital principles. In the first place, according to Leeuwenhoek, the size of the globules of blood are only $\frac{1}{25000}$ part of a grain of sand, or *thereabouts*. It is impossible to imagine the existence of vessels so small. In another, and more exact science, they would be called "mathematical lines." We must, therefore, seek for another principle which shall explain the exclusion of the red globules from vessels of a greater diameter. This is to be found in the different modifications of their irritability, in Haller's and Hunter's sense of the word; just as it is manifested in the elective function of the excretory vessels of the liver, kidneys, &c., and as seen in the refusal of the lacteals to take up bile.

By others it is contended that the introductory stage of inflammation is simply one of congestion;

"Characterized, first, by an increased activity of the vessels and influx of blood, various degrees of turgescence, &c.; and secondly, as the congestion increases, a laboured, slow circulation arising from the over-distension of the vessels, and an increased thickness and viscidity of the blood."

It might be supposed that this state of vascular turgescence, and whilst the blood is yet fluid, and the vessels possess an increased action, would be most auspicious to the various effusions. But it is not so considered.

"The period of inflammation," the writer continues, "is characterized by an entirely new order of morbid changes. The circulation is completely interrupted, the blood coagulates, clogs the vessels; some of the vessels are ruptured, and there is an extravasation either of blood or of coagulated lymph in the parenchyma; lymph and serum are also exuded, and the deposition of the new products leads to a decided change of structure." New vessels then appear which are said to be "mechanically formed."*

This writer, however, appears to adopt M. Gendrin's explanation of the formation of pus, which to us is unintelligible, considering the existing state of the vessels.

"After the inflammation," he says, "has attained its height, the circulation remains for some time stagnant, the vessels and intermediate cellular texture being both filled with coagulated blood and lymph; the colouring matter gradually disappears, the part assuming more and more an opal tint; small,

* Cyclopedia of Pract. Med. Art. *Inflammation*, p. 713.

yellow soft molecules may be seen interspersed through the coagulum, and some of them agglomerating in large globules evidently purulent. A slow degree of motion gradually becomes apparent by the oscillation of some of the globules in some of the vessels; whilst a passage seems to be made for others through the softened lymph by the formation of new vessels, especially near the surface."*

M. Gendrin, however, very justly supposes that in this state of the vessels there can be no vital action, and ascribes the formation of pus to a mere mechanical change of the blood, although we do not learn from him the philosophy of the change, nor how the blood begins to move, nor how the pus, all at once, makes its escape in such prodigious quantities from vessels so blockaded up with coagulated blood, and so destitute of all independent action. But in less embarrassed states of the vessels, he thinks that pus depends upon a vital process, and that it is then "une véritable sécrétion morbide."†

Nor do we see that Professor Nauman's explanation does more than confirm the difficulties.

"The physiological rationale of the developement of inflammation," says this gentleman, "is briefly as follows. The blood accumulating gradually in the capillary vessels, owing to the congestion in a part, becomes more and more a source of abnormal irritation to the nervous ramifications. The globules of blood become more and more crowded together. Owing to the impeded motion of the blood, its fibrine, (*from its organic affinity to the cruor,*) will be most easily held back, whilst the rarer parts of the fluid still find their way into the venous stream. When the increasing stagnation ceases to admit any of this, the serum of the blood at length penetrates the coats of the capillary vessels, and collects itself within the cellular texture, in the shape of what has been called puriform serum. At the same time the fibrine and the globules are retained in close conjunction with each other in the capillary vessels."‡

How the coarser fluids ultimately escape, does not appear in the journal from which we have made this extract. But Mr. Earle, and others, state that inflammation does not decrease with the suppurating process; that Mr. Hunter was wrong in considering this process a termination of inflammation, and that, of course, the vessels remain obstructed as usual. And this is perfectly philosophical. For, if stagnation and coagulation of blood were necessary to the first effusion of pus, it must be equally necessary so *long as this product continues to be formed,* however enormous may be the discharge.

We now come to that part of the doctrine of inflammation, which expounds the philosophy of the removal of parts interposed betwixt

* Ibid. p. 716. † Hist. Anatom. de Inflam., T. 2nd. S. 1461, 1463, etc.
‡ British and Foreign Medical Review, No. 5, p. 214.

an abscess and the surface, and which explodes Mr. Hunter's theory of the agency of the absorbents.

This hypothesis ascribes the phenomenon to the previous results of inflammation, and the forcing power of the heart, by which all surrounding tissues are broken down; although it is not shown how parts that disappear in this process are removed.

"As the course of the blood in the capillaries," says Mr. Earle, "is, generally speaking, from the centre towards the circumference, such is the direction of the *vis a tergo*, and such must be the usual course of the pus. It cannot penetrate from the circumference towards the centre, because there is no force by which it can be impelled in that direction." "The first effect of inflammatory infiltration is to destroy the original firmness and tenacity of every tissue in which it occurs, so as to cause it to be readily broken down, and give way on the slightest pressure; bone, cartilage, fibro-cartilage, are all affected alike." "It is evident, that although there must be a general yielding over the whole of the inflamed part, it will be most decided precisely at that point upon which the greatest degree of pressure is exerted."*

This would certainly appear to be the only solution that the new doctrine of inflammation will admit; and it has the consistency of adhering to fundamental principles. But a strong exception to the hypothesis must be fatal to it. In peritoneal inflammation the force of the *vis a tergo* is as much towards the cavity of the abdomen as the surface of the body; and yet when suppuration takes place, the matter penetrates through fascia, muscle, and skin, although the peritoneum is the only obstacle to be overcome in the other direction. We may also suppose that the downward and increasing pressure of the accumulated matter is quite equal to the *vis a tergo in the capillaries;* especially as the latter, according to the new theory, is generally supposed, and particularly by Mr. Earle, to depend wholly upon the heart. The same reasoning is applicable to many other parts, where the force of the vis a tergo is directed as much below an abscess as towards the surface. A striking instance exists in abscesses of the liver.

As to the manifest agency of the absorbents, it is not more remarkable that their operation should be restricted to the anterior wall of an abscess, than that they should be limited to the absorption of chyle in one part, or that blood should be excluded from the whole. We cannot interrogate nature as to the insensible principles upon which her vital phenomena depend. We must be content to know the results, and through them to infer the existence of laws as indispensable to the phenomena, as the soul is to thought or to voluntary motion.

* Op. Cit. p. 189.

But we can imagine that a reason for the greater activity of the ab-orbents of the anterior parietes of an abscess may be found in the greater activity of inflammation in this part; whilst some tissues, specially the serous, are little liable to ulceration. Mr. Hunter is certainly ambiguous, when he ascribes the progress of an abscess to-wards the surface to a species of intelligence. Still it is a figurative explanation. He appears to have been sensible of the philosophy, hat the process is the result of a general law, by which inflammation s more readily excited, and ranges higher in superficial parts, than in he deep seated. In virtue of this law, the anterior walls of an ab-scess more readily inflame and ulcerate than the posterior.

We come next to the granulating process; and this should be as much a mechanical one as the antecedent. Accordingly, it is said,

> "The same extreme simplicity reigns in this as throughout every preceding part of the process of inflammation." "It is as easy to explain the whole process of ulceration and mortification, as it was to account for the opening of n abscess, without even hinting at the existence of the lymphatic system."

And with scarcely more than this simple declaration, the all im-portant subject of absorption is dismissed; it being considered

> "Unnecessary, and would be *very inconvenient*, to inquire into the founda-ion of Mr. Hunter's opinions on the subject of absorption in this place."*

> "As the fresh fibrine exudes through the original layer by the channels or erforations, it will coagulate around them in little heaps."†

But we are not told how it happens that fibrine, or the granulations, ll at once make their appearance after an indefinite continuance of he suppurating process. It is stated that "there can be no essential lifference between suppurative and ulcerative inflammation."‡ But here is certainly this manifest difference in the results, as the terms re here employed, that pus is formed in one case and granulations in he other; that one is a destructive, whilst the other is a restorative rocess.

But suppose, instead of a healthy granulating ulcer, we look at a estructive one,—such as the syphilitic or cancerous. How, we would sk, is the removal of parts effected in such instances; and why are ot granulations formed as in the other case? Why is it often neces-ary to employ constitutional and local remedies, sometimes mercury, nd sometimes lunar caustic, to promote the deposition of coagulable ymph? How are the supposed mechanical laws affected by these gents?

* Mr. Earle, Op. Cit. pp. 218, 250. As to the absorbing power of the veins, it still *sub-judice.*

† Ibid. p. 219. ‡ Ibid. p. 222.

From whatever parts of the body granulations may spring up, they have all originally the same appearance. The same in bone as in muscle. But they are ultimately changed into the nature of the tissue from which they proceed. We know not the cause, but we see the effect; and this effect assures us of a specific action in the different granulations, accounts for the difference in purulent matter, as well as its general specific nature, and derides every attempt to solve the mystery by chemical or mechanical laws.

Dr. Johnson has shown by the most plausible analogy, that if the growth of the body depend upon vital action, so also must the formation of granulations.*

Finally, we come to mortification. And here we must not be surprised, having hitherto so entirely lost sight of the vital powers and actions, that they are allowed no part in the curious process that attends the separation of the dead from the living substance. The vis a tergo, the heart alone, from the beginning to the end of inflammation is the only agent by which all the phenomena are carried on. But, it is said,

"The separation of the dead from the living parts has, since the time of Mr Hunter, been supposed to be performed by the agency of the absorbing vessels nor does any one, so far as known to Mr. Earle, doubt the correctness of this branch of Mr. Hunter's favourite doctrine."

We are told, however, that the absorbents have no more to do with it, than they have with the process of ulceration. And the same reason for rejecting the absorbents that was before stated, is here repeated, viz: because "a full and complete explanation of every circumstance connected with mortification can be given, without even alluding to the existence of the lymphatic system."† If nothing can be easier or more simple, certainly nothing can be more consistent. Fluids, as we have seen, are effused.

"The first effect," it is said, "is that of destroying the natural tenacity of the solids, of rendering them, as it were, rotten, so as to be easily broken down by the slightest pressure. Of course, this effect must be most apparent at the point where there is most effusion, which must be exactly where the living touches upon the dead part. Thus it happens that the force of the vis a tergo by whose pressure the effusion of the different parts of the blood is effected impinges precisely upon those points which are the weakest and most likely to give way; by which means the dead part is gradually detached from the living, and, as it were, washed off by the discharge."‡

Since we have endeavoured to show that the doctrine of pressure as applied to ulceration to explain an analogous process, is not only

* Med. Chirurg. Rev., Vol. XX. p. 227. † Op. Cit. p. 250. ‡ Page 250

eficient, but contradicted by facts, it may be considered equally roundless as it regards mortification. There is nothing more marellous in the supposition that dead parts may so stimulate the absorbnts, whose action is already modified, and thus prepared by a speific condition of disease, to remove the contiguous living parts, than here is in any other vital phenomenon.

But it is important to recollect that the vessels in mortification are upposed to be more than ever obstructed by coagulated blood, and hat it is in virtue of this accident that the part dies. The adjacent ound part is also inflamed, and its vessels, of course, greatly obstructd. It does not, therefore, so clearly appear how the forcing influnce of the heart is to reach the sloughing part.

We might go on to illustrate this subject by analogies drawn from he vegetable kingdom; and inquire how far the removal of their loughing parts depends upon the mechanical action of the *vis a tergo;* ow far their reproduction upon chemical or mechanical laws, &c.; nd, lastly, we might show that one theory has been built upon anther, to account for the precise, yet diversified and unique phenomea of inflammation.

As to the cause of mortification, we need not the aid of the mehanical doctrine, excepting so far as circulation ceases when the art dies. It is as easy to understand how the life of a part may be estroyed by the alteration of its powers and functions, which contitutes disease, as to comprehend the manner in which constitutional ever extinguishes the entire life of the body. There is something, ndeed, in the rapidity with which decomposition sometimes goes on n mortification from inflammation, as in erysipelas and morbid poions, that is without any analogy in chemical philosophy, and which an only be explained, if we may hazard the expression, upon vital rinciples.

In having thus endeavoured to sustain the doctrines of Mr. Hunter, e certainly do not recognise a *vis medicatrix naturæ* in the sense in hich it is ridiculed by Mr. Earle and others; nor do we think that e construction which is forced upon those who adopt it is justified y fair interpretation. Provident nature has so ordered many of the ctions of disease, that they shall ultimately terminate in a sanative rocess; and instead of the interposition of any latent and mysterious gent, the ultimate result is brought about by the same vital powers, nd by the same instruments that had been engaged in the morbid rocess.

"The good God that created the animal stamped upon his organization a

tendency to actions, and a power of originating them, adapted to the repair o
a certain amount of injury."*

This, we believe, is all that medical philosophers of the presen
day intend by the *vis medicatrix naturæ;* a figurative term, we admit
that ought to be hunted down, but should not carry with it those who
employ it for mere convenience.

We perfectly agree with Mr. Earle, that "although the progress
of improvement may be for a time retarded by too great a deferenc
to authority, it is impossible that men's minds should remain imper-
vious to the direct evidence of simple facts." But should it be other-
wise, and the mechanical doctrine of inflammation ultimately prevail
then every process of the living body, whether morbid or healthy
must be construed by the same rule; unless, perhaps, a different prin-
ciple must be necessarily admitted to preside over the heart, just as
the materialist is forced to the recognition of consciousness. We
make every allowance for the obliquity of unbelievers, and are even
content that the whole subject of inflammation shall be tested by those
mechanical laws which our friends have assumed as its foundation.

Another observer, despairing of light from the "*contractions* of any
of the solids," thinks we ought rather to look for it "in the state o
the attractions subsisting during the living state among the particles
of the blood, and between them and the surrounding solids."† Bu
here, too, we are willing to leave the explanation to the mechanical
laws.

We have now seen that the doctrine of passive relaxation of the
vessels, and the consequent stagnation and coagulation of blood, can
never explain, and is even opposed by, the phenomena of increased
heat; throbbing in the immediate instruments of disease, when the
force of the heart is not increased; the greatly increased volume of
blood circulating in these instruments, and its general increased
fluidity, urged on, too, by an increasing force of the vis a tergo; the
augmented force with which the blood escapes from the vessels, when
divided, showing not only an undisturbed circulation, but a positive
action of the vessels themselves; the remarkable varieties of inflam-
mation, and their peculiar products; the effusion of serum, lymph
pus, and finally, of blood, especially in the inverse order of the
respective diameters of their globules and the diameters of the ves-
sels; the exclusion of the more fluid parts, whilst the grosser alon
escape; the disappearance of the colouring matter from all but th

* Dr. Johnson in Medico-Chirurg. Rev., Vol. XX. p. 328.

† London Med. Gazette, Vol. XVI. p. 744. So, also, Dr. Hall in his Principle
of the Theory and Practice of Medicine.

globules of blood; the extraordinary processes of ulceration, reproduction and sloughing; and, finally, the causes and curative means of inflammation.

On the other hand, whilst the foregoing doctrine leaves nothing to the vital forces and actions, these are capable of explaining every phenomenon of inflammation.

We shall now notice an experiment lately made by Professor Allison, since it is supposed to be an *experimentum crucis*. To ascertain whether "the arteries leading to an inflamed part are really endowed with a greater vital power of contraction than sound arteries," Prof. A. at different periods after killing the animal, compared the vessels of the inflamed limb with the corresponding ones in the opposite sound limb. At the moment of death, the artery leading to the inflamed part had contracted less than that of the sound limb. At a second examination, sixteen or twenty-four hours after the first, the artery in the inflamed limb still remained larger than the other. That of the inflamed limb retained a considerable quantity of blood, whilst the other was almost empty.* Here is no room for mistake, no microscope, no vital forces to be equivocally explored. We cannot think, however, that the experiment proves any thing more than that the arteries contract after death, as we have always believed, mainly by virtue of their elastic property. This property was impaired in two ways in the morbid vessels; by the diseased state of the vital forces, and by the interstitial deposit in the dilated vascular parietes. Indeed, it was a part of the experiment to prove that the elasticity of the artery of the inflamed limb was impaired.†

Dr. Poiseuille thinks he has proved by experiments, that "the heart and elasticity of the arterial coats are the sole agents in capillary circulation;" and this has been often assumed in support of some hypothesis. But however the phenomena of nature may set these experiments aside, we have as little doubt that the elasticity of the vessels is impaired by inflammation, as that their vital forces are increased by that mode of disease, or immediately so extinguished by death as to render them inoperative in the natural condition of the body.

From the foregoing experiments a new hypothesis comes up; that the vessels in inflammation are not only in a state of relaxation, but that there is an increased action by which the blood is moved in the capillaries of the part, resulting from powers inherent in the blood itself, and independent of any contraction of the blood-vessels, "the

* London Med. Gazette, Vol. XVI.

† Even in the natural state of parts, elasticity is evidently modified by the laws of life.

action being not *in the vessels, but within the vessels.*" This principle has been supposed by many to appertain to the blood since the time of Harvey and Haller; but it is now asserted that it is increased in inflammation. The increased exertion of the powers of the blood leads to distension, and a diminution of the tonicity of the vessels. How far this may be a matter of speculation, or inferable from facts or from reason, we shall not attempt to show. It certainly is not supported by the sluggish motion of the blood in inflammation, which its advocates also profess.

The general hypothesis is, that the blood, at least in the seat of inflammation, is moved alone by the force of the heart. We have lately seen a writer maintaining that the increased action of the heart is owing to a mechanical cause; that,

"As every point of stagnation offers a point of increasing resistance, it follows as a mechanical consequence, that the impulson of the recoil must return to the heart as the original instrument of the propulsion, by which it is excited to stronger and more frequent contractions."*

But will this explain the phenomena afforded by the familiar example of a whitlow, as stated by Mr. Hunter? Do we not constantly find the larger vessels, proceeding to an inflamed part, pulsating with violence long before the action of the part becomes affected? How often does it not happen in coexisting inflammations and venous congestions of the brain or abdominal viscera, and where the action of the heart is prostrated by the latter form of disease, that the carotid and abdominal arteries beat with extraordinary energy, "quod pulsatio in præcordiis manifestat?"† φλεϐων σφυγμοὶ παρ ομφαλὸν.‡ How, too, will the foregoing doctrine explain the tumultuous action of the heart in many cases where no inflammation exists, when induced by excessive abstractions of blood, &c? If the vital laws are to expound the phenomenon in all other cases than inflammation, it appears not unphilosophical to admit the operation of sympathy in this instance. Besides it is the well known effect of unusual determinations of blood upon the heart to embarrass its action and lessen its force.

We do not expect to demonstrate the actions of the extreme and almost invisible vessels, more than we do the vital powers upon which they depend. We are allowed to infer the existence of the latter from the phenomena; and we see not why the results that appertain to the capillary system, or rather to the extreme vessels, are not as good evidence in proof of the former. And why are these minute vessels so

* Weatherhead on Diseases of the Lungs, p. 19.

† Aretæus, De Acut. L. 2, c. 8.

‡ Hippocrates Morb. Populor. L. 4, ver. 129.

eminently endowed with the vital forces, unless for the performance of some specific functions; and can those functions take place without some independent action?" We see the same powers modified in inflammation, and other diseases, and this is, therefore, a strong ground for belief that there are corresponding modified actions. It may be, that in the larger arteries no such action exists, since they are designed as conduits through which the blood is propelled by the heart, and appear to have no other final cause. But in the extreme vessels we see a vast variety of specific phenomena taking place, and it is only here that we witness the principal manifestations of the vital properties.

If the vessels in inflammation be actually weakened, passively dilated, clogged up with coagulated blood, when does their tone return, and by what causes is it re-established? If by the vital forces, when and how came they again into operation?

It being supposed that the vessels are weakened in inflammation, it has been necessary to assume that the causes are debilitating; and it were well that the subjects, also, should be amongst the feeble instead of the robust. It seems, however, to be generally in all respects otherwise. For instance, pneumonia affects mostly the robust and plethoric. Cold, when suddenly applied, is one of its exciting causes, which, in its ordinary operation, is tonic. Stimulants and direct tonics are other causes of inflammation. But if the causes be really debilitating, the remedies should be invigorating; and these, therefore, consist of blood-letting, cathartics, tartarized antimony, &c.

We shall close these remarks with an argument in favour of the Hunterean theory of inflammation, drawn from the nature and formation of pus. If it can be shown to differ from the component parts of the blood, or to depend on a secretory process, it would appear to substantiate an independent action in the instruments of inflammation.

Mr. Earle, and the friends of the new school of inflammation, find it necessary to identify pus with a component part of the blood, and to explain its formation upon mechanical principles.

They contend that neither inflammation nor pus being met with in the healthy system, pus is not, therefore,

"A healthy secretion;" and "it is as little entitled to be called a morbid secretion, because by this term is understood some change or deviation from that which is usually recognised as the healthy condition of a secretion. The term morbid secretion, therefore, applies to black bile, and to diabetic urine; but no to pus, which is an entirely new formation."*

This would appear, as we have said, to follow from the new doc-

* Op. Cit., p. 137.

trine of inflammation. For secretion is a process that depends on an active state of the vessels. But since the vessels are relaxed and encumbered with coagulated blood, it is reasonable to conclude that pus depends upon some other function more compatible with such a state of the vessels, and that, therefore, it is not a secreted fluid.

But there is nothing to show, save the objection we have stated ourselves, that new formations may not be as purely the result of a secretory process as bile or urine. We do not see the logic of the foregoing conclusion. Man may bestow names upon natural phenomena; but in excluding analogous ones that may depend on a new condition of the powers and functions of the body, he must show their incompatibility with those laws of vitality upon which the natural phenomena depend. If there may be a morbid state of action, it seems very philosophical to suppose a morbid secretion. We cannot otherwise reason from analogies supplied by the healthy system, to diseased states of the system. In the latter case the modified power must be regarded as performing new functions. New products, therefore, may arise; and however we may choose to restrict the term *secretion* to healthy products, it does not follow that the morbid ones, although wholly new, may not be equally entitled to that appellation.

But do we not find in the very argument that is urged against the formation of pus as a secreted fluid, an illustrative fact that it is really the product of morbid secretion? It is admitted that there may be morbid bile, depending upon a morbid process. Now healthy bile is one thing, and morbid bile another. One action is natural, the other unnatural. Morbid bile has no more existence in the healthy system than pus, and it cannot take place without the morbid process. We see not, therefore, why, in a uniform modification of the vital powers and functions, as in common inflammation, the natural secretions of the parenchymatous capillary arteries may not be, in like manner, changed into pus. Mr. Earle and his friends consider pus the nucleus of the red globules, and that nucleus is supposed to be coagulable lymph. And yet it is maintained that pus is a new formation.

But, if it be still insisted that pus is wholly a "new formation," we ask for the proof that such formations do not depend upon a secretory process. An assumption has been made, and a syllogism invented to sustain it. But this cannot pass in opposition to a better syllogism; and, as we believe, to direct and unquestionable facts that are supplied by analogy, as well as the laws that govern the living body. Does bone ever form in the healthy membranes of the brain; melicerous, steatomatous, carcinomatous, hæmatodic, and other specific products, take place in any part of the body without specific conditions

of disease, and that disease in all probability, of an inflammatory nature? And will it be denied that these are the result of a secretory process?

Upon the hypothesis just quoted, we might, also, equally argue that pus is not separated mechanically from the blood, since such a phenomenon never occurs in the healthy system; and it is not pretended that its mechanical origin is supported by any analogy in disease.

Again, it is said,

"There is this essential distinction between a secretion and pus; the products of the secernent function are different in every membrane, texture, and organ of the body; mucus is secreted from the blood in vessels of mucous membranes, &c.; whilst no such variety is observed in the formation of pus."*

Admitting the latter statement to be true, we cannot see the force of the analogy. The liver secretes bile; the kidneys urine; the lachrymal, salivary, and cutaneous glands, produce tears, saliva, sweat, &c.; because the several organs are made up in a distinct and complex manner for this purpose. For this reason we should say, *à priori*, that the products would be different, and would vary in their composition according to the complexity of the organs. But in inflammation, it is not the glandular apparatus that is concerned, but the circulating, whose action must be supposed to be very similar in every part of the body. We should, therefore, in this case, also infer, *à priori*, that in the same conditions of inflammation, the products would be the same; that in one condition we should have serum, in another lymph, and in another always pus. And we may take from Mr. Earle, what he intended as an objection, another evidence that our conclusion is right. "As the blood is the same from whatever artery it is taken, and also, as inflammation is essentially the same, in whatever texture it may occur, the effect thereof must be the same in all."†

But we believe it is not true, that simple structures, which are admitted by our friends to perform a secernent function, do not have their natural products changed into pus by inflammation. Take the very one quoted above, by which the adverse hypothesis is sustained. Do we not often find, in inflammations of the mucous membrane of the lungs, that the secretion of mucus is converted into a copious effusion of purulent matter, and this too, where there is no ulceration of the membrane. The same fact may be affirmed of the serous membranes. That the liver never secretes pus, except in its nutritive and circulating parenchyma, is highly probable; for here the secernent apparatus is complex, the laws specific; and the effusion of bile, or, in the kid-

* Mr. Earle, ut supra. † Op. Cit.

neys of urine, is a direct impediment to the formation of that kind and and degree of inflammation in the secerning apparatus, that are necessary to the formation of pus.

"The term secretion;" say our friends, "ought never to have been applied to the fluid which is called pus; for this term in its true signification is expressive of something which results from the operation of the nervous influence on the blood. Now it has already been shown that the secernent function of the nerves is put a stop to, in the very commencement of inflammation, of which pus is only one of the results."*

If we admit the latter proposition to be true, of which, however, we are hardly satisfied, except in cases where the nervous communication has been uninterrupted, we must certainly reject the former. It will then follow according to the foregoing reasoning, that since, as we shall show, the nervous influence is not necessary to the function of secretion in the natural state of a part, it is not necessary to it when the part is inflamed.

Now, we doubt not that the secretion of any complex organ, like the liver, or the kidneys, would be suspended or greatly diminished by cutting off the nervous influence. This influence is necessary to maintain a harmony of action amongst so many parts as are here concerned in the processs of secretion; and it is but reasonable to suppose that when this concert of action is violently disturbed, we shall witness some remarkable change in the natural product. It has been also most conclusively shown by Dr. Philip in more simple organs, as in the mucous membrane of the lungs and stomach, that the secretions of those organs are modified by a division of the par vagum, especially in the latter organ. But so far from the secretions being suspended in consequence, they are actually increased, and this constitutes the main peculiarity in the lungs. Nor can any appreciable change from the natural state of the mucous or the gastric juice be detected; whilst there may be, also, simultaneously induced a state of inflammation by dividing the nerve. "The lungs," says Dr. Philip, whose authority is so justly invoked in this matter by Mr. Earle and his school,

"Are found after death *distended* with a frothy fluid, which filled the bronchia and air cells, and prevents the lungs from collapsing;" and as to the stomach, "it deserves notice, that although the eighth pair of nerves have been divided, the food is found covered with apparently the same semi-fluid which we find covering the food in *a healthy stomach.*"†

Here we are contemplating simple structures, though even less so than the apparatus of inflammatory action. We find the secretions

* Op. Cit.

† Experimental Inquiry, &c., C. 5, S. 1.

at least not diminished by removing the nervous influence; and the only known change that takes place in those of the stomach is inferred from the food being undigested. The whole matter, therefore, is resolved into the simple fact, that the nervous influence is necessary, and only necessary, to impart to secreted fluids some unknown specific property that may be designed for some great final cause.

It being thus shown that the nervous influence is not necessary to the function of secretion, in its general sense, the same process, *a fortiori,* may go on in inflammation and result in the formation of a new product. By the foregoing reasoning, also, if the nervous influence be suspended in inflammation, it is rendered more probable that a change should take place in the natural secretions of parts when inflamed; that instead of serum we should have lymph; and purulent matter instead of lymph and mucus; since it appears on dividing the par vagum, the gastric juice is so modified that it loses its property of digesting food.

It is also said, "that whilst the utility of every part of the secernent function is obvious, no one has been able to offer even a probable conjecture as to the use of pus."*

Here the implied analogy is obviously defective; since the final cause of healthy secretion must be clearly different from the morbid. As well, too, might we say, that vitiated bile, or diabetic urine, are not secretions, because their uses may be unknown. But if any final cause appertain to the secretion of pus, we shall no doubt find it bearing a strong relation to the curative means of inflammation.† And, accordingly, we find that it is actually instituted by nature for the removal of that mode of disease; as is most distinctly evinced in all suppurating phlegmasiæ. Who does not know that inflammation of the breast, of biles, &c., is greatly diminished as soon as suppuration has taken place? Just so, too, with dropsical effusions that follow inflammation. So entirely is the vascularity often overcome by the effusion, that physicians frequently declare that such cases have had no dependence on inflammation; and this, perhaps, in the very face of the most characteristic symptoms and the depleting treatment.

That such is the final cause of suppuration is rendered farther obvious by the subsequent beginning of the restorative process, or the process of granulation; which, indeed, never commences upon an ex-

* Mr. Earle. Op. Cit.

† Mr. Earle says, "it is merely the inevitable consequence of the original stagnation of blood." (*Op. Cit. p.* 190.) Perhaps it may be so, though it might be difficult to show that it is. But may not the same be affirmed of every cause and effect? It does not at all alter the question as to the modus operandi.

posed surface till a full suppuration has nearly removed the inflammation.

It appears, therefore, that only a low degree of inflammation is necessary to the formation of pus, or a morbid secretion of serum; and this may be maintained as well by the influence of habit as by other causes. Even the new granulations take on the suppurating action through the influence of sympathy.

But it appears, also, that purulent matter is not always the same, however some chemists may have been led to an opposite conclusion. This opinion has prevailed from the time of Hippocrates, who says of it, "pus vero optimum est album, æquale et læve, et quam minimum graveolens; huic autem contrarium pessimum." It was originally founded, it is true, upon the sensible appearances of pus, and upon the obvious differences in the state of the vital powers and actions in different cases. "There is certainly no obvious difference," (according to the microscope,) says M. Gendrin, "betwixt the pus of chancres and that of simple wounds or ulcers." But this shrewd and laborious philosopher candidly adds, that "it possesses *other differences* which elude our means of investigation."*

It appears, too, from a variety of facts, that pus is specifically different from any component part of the blood. The globules of pus are distinguished from all other animal fluids, with the exception of homogeneous blood, in being changed by sal ammoniac into a tenaceous jelly. This substance dissolves the globules of blood, and ultimately fibrine, whilst it has no such action on the globules of pus.† When pus is combined with blood, coagulation takes place in the usual manner; but the coagulum soon after becomes fluid.‡ Pus precipitates in cold water, and according to Gendrin and others, the precipitate is equally globular as pus. "It appears, indeed, to contain a greater quantity of globules than fresh purulent matter.§

M. Donné considers pus a chemical product resulting from the action of an acid upon albuminous matter. With others he estimates the globules at twice the size of those of the blood, and considers

* "Cependant il présente d'autres différences qu'il n'est pas donné de reconnoître par nos moyens physiques d'investigation." (*Hist Anatom. des Inflam. T.* 2, *S.* 1473.) Again, "On conçoit qu'il peut y avoir des modifications nombreuses dans la facilité avec laquelle il est produit, purisqu'il tire évidemment son origine du sang qui peut être altéré de bien des manières, et qu'il est subordonné a l'existence d'une phlegmasie dans la partie ou il se forme." (*S.* 1468.) He states, also, many facts that lead to this conclusion, as seen in caries, scrofula, gout, &c., where chemistry shows a distinction in the component parts of pus.

† M. Donné in Archives Générales, Août. 1836. ‡ Ibid.

§ Hist. Anatom. des Inflam. T. 2, S. 1472.

them of a different shape and structure.* Hodgkin says "they bear no resemblance to those of the blood."† Sir E. Home,‡ and Mr. Liston,§ maintain that the globules are formed after the matter is secreted. M. Gendrin makes pus to depend, in the most obstructed state of the vessels, upon a mere chemical process, not yet well known; being then wholly independent of any vital influence of the inflamed part. In less embarrassed states of the vessels, he considers it a true secretion, and often speaks of it as "une veritable sécrétion morbide." At other times he thinks that extravasated blood may be equally changed into pus.‖ This is nearly the opinion of Mr. Key, who thinks, also, it may sometimes depend upon the breaking up of a tissue, and its gradual conversion into pus."¶ Dr. Carswell thinks it may be sometimes the result of vital action, and again of a spontaneous change of extra vascular blood."** De Haen,†† Andral,‡‡ and others, believe that pus, under certain circumstances, may form itself altogether in the blood.

Nothing can be more incompatible with the common analogies of nature, or supply a stronger evidence that pus is a substance *sui generis*, and the propriety of looking to the vital forces for an explanation of its origin. If "the laws of physiology begin where those of the physical sciences end," it cannot be that pus is sometimes the result of a vital process, sometimes formed by the transmutation of solid parts, or again a putrescent or other chemical change of extravasated or intravascular blood.

Pus is said to resemble serum in its composition more than fibrine, and again it is considered identical with the latter, and by others with the nucleus of the red globules. But lymph coagulates spontaneously, whilst pus does not. Pus also evaporates to dryness, without coagulating, nor is it coagulated by oxymuriate of mercury. It precipitates from its solution in sulphuric acid, and it is precipitated by water from a solution in potass. Thus, direct analyses of animal products may not be always trusted.

"I have endeavoured to prove," says M. Raspail, "how deceptious re-agents are, as applied to a substance so complicated as the blood. Nature abounds

* Ut. supra.

† Anatomical Catalogue of Guy's Hospital Obs. on Sec. 2, Part 1.

‡ Wilson on the Blood, &c. p. 291.

§ Elements of Surgery, p. 30.

‖ Hist. Anatom. des Inflam. T. 2, S. 1461, 1463, &c.

¶ Med. Chir. Trans. Vol. XIX. p. 142, &c.

** Illustrations of the Elementary Forms of Disease. Fas. 8.

†† Method Medendi. De Gen. Paris, T. 1, p. 60.

‡‡ Clinique Médicale, T. 4, p. 683.

in mixtures, whose study the chemist has not entered upon, and which might be capable of presenting on a small scale the appearance of blood."*

Whilst a theory has been established upon the supposed abundance of iron in the colouring matter of blood, "Professor Brande has tried in various ways to detect the presence of that metal, but has always found the traces indistinct."† In opposition to others, he considers the colouring matter a peculiar animal substance. "It is remarkable," says Messrs. Brett and Bird, "that the experiments of Berzelius on the reactions of nitric acid on cruor are completely opposed to ours."‡

Dr. Davy§ states that there is little or no change of colour, on agitating venous blood with atmospheric air. On the other hand, Dr. Christison|| avers that "the purple venous blood becomes brightly crimson, and remains so for more than a day." Dr. Davy says that hydrogen gas had the same effect as atmospheric air. Dr. Christison says it produces no effect. Dr. Davy proved, also, by experiments, that when air is agitated with venous blood, "its volume is not changed, nor its composition appreciably altered." He sometimes employed a pound of blood, and a flask of two or three gallons. Dr. Christison, however, has shown as conclusively, that there "is not that want of action on the air which Dr. Davy believes he has established," and that the common opinion is correct. Berzelius makes the solid part of chyle to consist of twenty per cent. of fat, and Raspail thinks it differs but little from milk. Prout and Turner, however, find in it only an appreciable trace of oily matter, and state that it wants only the red globules to complete its resemblance to blood. Again, chemistry declares no difference betwixt milk and sweet almonds, the latter being only milk in a solid form.

Dr. E. Thomson,¶ by digesting muscular fibre in muriatic acid, produced a substance "exactly resembling chyme;" whilst Dr. Davy** found that the putrefaction of muscle was attended by a like result. Chemistry also professes to show that the albumen of eggs and the product of certain cancers are exactly the same thing. Chemistry identifies starch, gum arabic, liquorice, sugar and vinegar. Its report is nearly the same in respect to pus, serum, mucus, lymph, and blood itself. We must suppose, therefore, that in one case, the elements and constituents are combined in peculiar ways by the agency of the

* On Organic Chemistry, p. 417. † S. Wilson's Lectures on the Blood, p. 40.
‡ London Med. Gazette, Vol. XVI., p. 754.
§ Edinb. Med. and Surg. Journal, Vol. XXXIV., p. 243.
|| Ibid. Vol. XXXV., p. 94.
¶ Sixth Report of the British Association for the Advancement of Science.
** Edinburgh Med. and Surg. Journal, Vol. XXXIV., p. 264.

vital laws; in the other, that the combinations of the elements are equally modified by the laws of chemistry, if not of vitality, although we know nothing of the manner.

The farther, indeed, the chemist pushes his investigations, the more he multiplies proofs, that the whole subject belongs, essentially, to another department of philosophy. We give to chemistry an allotment in the whole organized economy; but always in entire subordination to the laws of life; whose operations are, therefore, antecedent, and direct the agents they hold in control.

Chemistry, therefore, is wholly against the theories which are founded on mechanical principles, and even against her own laws. Since, if the changes depend on chemical principles, other products should be found; inflammatory action should not be necessary to a particular result, nor should there be a uniformity in the particular modification which attends a secretion from a particular organ, as in inflammations of the mucous membranes, and at a particular stage of inflammation, yet varying, though still uniform, at other stages; nor should there always be a distinctive character to the products of the several modes of inflammation; nor should each organ manifest, in these respects, its own peculiarities, as evinced by the secretions, and the coincident nature, in each part, of its own granulations. Chemistry can do no more than fulfil its legitimate office. The secretions being derived from the blood, should present the elements, and perhaps also, though variously combined and modified, the constituents of that fluid. But even the variable proportions of the natural constituents, as they may be determined by disease, can only be explained by the vital laws.

Blood, according to the ingenious Dr. Babbington, is truly a *homogeneous* fluid, and there is no such thing in nature as lymph and serum. The liquor sanguinis only separates into its component parts, after the laws of vitality cease to operate.* From all which we infer that when lymph, serum, and all other products from the homogeneous, living blood, take place, it can only be through the agency of the vital laws. If, also, we allow vitality to the blood, it is but reasonable to conclude, that its various component, as well as elementary parts, will be held together by the law of vital affinity till that law ceases to operate; or, till it is overcome by the greater and united laws of the secerning vessels. And although the spontaneous separation of the component parts of blood, imply a decline or an extinction of the vital forces, yet no such result may appertain to coagulable lymph when eliminated by the living solids; but the process being a vital

* Med. Chirurg. Trans., Vol. XVI. p. 293.

one, the vessels of excretion may even endow the lymph with greater vitality.

It is an inference, also, not easily resisted, that since the various secretions of the body, in their natural state, depend upon the action of the vital laws, they are equally the product of those laws, when redundant in quantity, or when modified in quality. If physical laws were essentially concerned in the process, many of the facts which we have mentioned could have no existence. If chemical laws mainly operate, then should the products be widely different from the constituents of the blood. These laws are not concerned in diversifying the proportions of those constituents; but in separating their elements and forming new compounds. Such apparently sometimes happens, as seen in the presence of the hydrocyanic acid and saccharine matter in the urine. These form stumbling blocks in our way, from being rare and almost solitary evidences of the possible independent operation of chemical laws in the animal system; its most extraordinary characteristic consisting in its abstraction from the laws of chemistry.

The natural philosopher, relying upon uniformity and universality in the operations of nature, toils at apparent exceptions till they are reconciled to her general laws. And although in physiology, as in the instance to which we are referring, an effort be sometimes made to show that nature is not always consistent, the devious course, like the pursuit of alchymy, will ultimately conduct us to the truth.

The elements of inorganic, and especially of dead organic, matter, are constantly combining spontaneously into specific compounds, again separating, and again uniting to form other combinations. Every part of the animal or the vegetable kingdom is alike composed of those elements, and in definite proportions. They defy, however, the laws of chemistry, whilst they are endowed with life, although as shown by Chevreul and others, their elements, in death, are held together by more feeble affinities than those of inorganic matter. And when the principle of vital affinity gives way, the being that had for years resisted the action of chemical laws may be speedily broken up and the elements may form a multitude of new combinations; but they require for their reconstruction the agency of organized matter. For this purpose, nature has contrived a most elaborate system, in which she has placed the laws of physics and of chemistry in the most perfect subordination to the vital, as if to magnify the grandeur of her operations. We may trace the plan with increasing conviction, without a solitary hope for the materialist, from the infusoria up to man. And yet, with all the complex organization of animals, and all its superior endowments with the vital forces, and we may add, with all the agency of the

chemical laws, the elements of what was once organized matter cannot yet be combined till they have felt the creating power of the vegetable world.

These laws are the foundation of an elegant distinction betwixt the vegetable and animal kingdoms; the former subsisting upon inorganic, whilst the latter live upon organic matter; thus manifesting a general final cause of vegetable life, in its supply of nourishment to the higher kingdom; whilst a more specific is seen in the ultimate tendency of the whole process of vegetation to result in means for perpetuating its own species. If the elements which compose organic matter are but few, and their combinations limited and of a specific nature, it only shows the limited agency of the chemical laws. It is the license of these laws, however precise they may be, to operate in the most unrestrained manner, and with only a fortuitous result. But in all living organized matter, the perfection of design is so manifest in its structure, in its functions and products, that we irresistibly admit that it must be withdrawn from the capricious influence of chemical or physical laws.

Had it been consistent with proper brevity, we could have wished to have illustrated the whole subject by analogies drawn from animals that are destitute of a heart, and from the vegetable kingdom. Their healthy and morbid processes, their healthy and morbid products; the infinite varieties that occur in these respects in the latter kingdom, according to the organization and endowments of each species of which it is composed, and yet these varieties always the same; the very limited number of elements that make up the endless variety of the specific products, as well as the organized parts, and many other corresponding facts, reflect a flood of light upon our subject.

Here we see the greatest simplification of the laws and functions of organic life. They are divested of those secondary influences which so constantly embarrass our inquiries in more complex organization; and whilst they are, therefore, better subjects for experimental research, the facts they supply, which are full of analogies, may be safely carried up as analogies to the most complex beings.

Powerful attempts are now making to introduce a new philosophy into medicine and physiology, or to revive an exploded one. Whilst the unique process of inflammation and its results are to be expounded on mechanical principles, a coagulum of blood, long extravasated and long dead, is to be revived and organized, and carry on an isolated life by its own independent resources; and this, too, in the midst of venous blood. By this it is to be nourished, whilst it is known to

be fatal when circulating in the nutritive system of other parts. The highest degree of vitality, a mysteriously vivifying influence, far exceeding the *spiritus archæus*, is thus given to the blood, when it is yet undetermined whether it possesses any vitality at all. Coagula of blood are, also, supposed to undergo every variety of spontaneous change that attend the actions of living organized matter; and which have hitherto been referred to the agency of the vital forces. Thus they are said to undergo spontaneous conversions into pus, and by those who believe that pus is at other times a secretion; to change into calcareous matter arranged in concentric layers, although there may have been originally no lime in the clot; into carcinomatous, melanotic, lardaceous, hœmatodic, mammary and scrofulous degenerations, &c. The glandular structures are to be mere strainers of the blood, and the secretions, the matters strained. And to finish the climax, the humoral pathology is to simplify disease in such a manner, that according to a truly eminent physician,

"Passing by this organ and that, and this function and that secretion, we penetrate the spring and source of all, even to the blood itself, and there find the seminal principle of disease; and that this, in hitherto most fatal of all fevers, may be remediable by the simplest means, which are always at hand."*

This simple means is the muriate of soda.

These subjects have all an important bearing upon the Hunterian philosophy of inflammation; and a blow has been, therefore, not only directly, but indirectly, given to the proudest monument of Hunter's fame; and may we not say, to some of the most sublime conceptions of nature? Whatever relates to Mr. Hunter is imbued with an exciting interest. But it might not, perhaps, become a foreign hand to shield the fame of Hunter, whilst England watches in the field of science. We may at least, however, protect those fundamental principles which are the bulwark of medicine, should we be striving, side by side, with their immortal author. Would that we are not mistaken. That we do not bow before an idol. That the wreath he has worn has not been composed of the flowers of fancy; and that he will still continue to preside in the temple of his own creation.

New York, Feb., 1838.

* Dr. Latham on "Subjects connected with Clinical Medicine," p. 53.

Fig. 1.

Fig. 2.

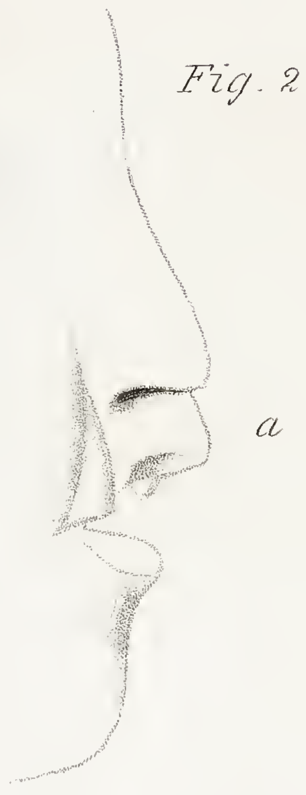


Fig. 3.

Fig. 4.

Art. VI. *An account of two Cases of Congenital Division of the Lip and Palate occurring in the same family, in which operations were performed.* By Isaac Parrish, M. D., one of the Surgeons of the Wills' Hospital. [With a Plate.]

The following history of two cases of a singular variety of malformation, called in common language, hare-lip, has been drawn up, more particularly with a view of pointing out the means adopted for their relief, than of attempting an elaborate description of the several varieties of this disgusting deformity.*

The subjects of the present notice were the children of Robert G. Croft, a farmer, residing in the interior of this state. They were born within a year of each other, the elder, a boy, being seventeen months old, and the younger, a girl, five months. The former was the subject of a double hare-lip, with cleft in the palate of a most aggravated form; in the latter a similar defect existed on one side.

The parents were young, healthy, and well formed. They had two older children, in whose organization no imperfection existed. The cause of the distressing defect in the younger children must of course be a matter of speculation. The mother, as is usual on such occasions, could give an explanation of the phenomenon, which appeared satisfactory to her own mind, however insufficient it might be deemed by the less credulous. It is not necessary to narrate here the transaction to which she referred the afflictions of her children, it may be sufficient to state that about the sixth or seventh month of pregnancy, she experienced a fright, and when her child was born he was found to be deformed in the manner stated. The anxiety and trouble which this circumstance occasioned her, determined, according to her belief, a defect in her succeeding child.

Being incapable of drawing nutriment from the breast of the mother, the children were sustained with great difficulty during the first few weeks of their lives; they, however, soon acquired a facility in taking nourishment, and at the ages mentioned were brought to Philadelphia and placed under my care.

The case of the boy, was the most appalling. The deficiency in the lip on both sides was very great, and the only point in which we could rely for a union of the opposing surfaces, was in a narrow slip of in-

*The reader who feels curious on the subject of hare-lip, will do well to consult an interesting article on Staphyloraphy, published in the last number of this journal, by Dr. John P. Mettauer, of Virginia.

tegument of an oval form, attached to the tip of the nose, (see *Pl. II. Fig.* 2, *a*,) and covering an insulated portion of the alveolar process and gum, which came down in the middle of the wide chasm in the roof of the mouth.

The nostrils and lip on either side were continuous, and the middle cartilage of the nose was almost wanting, giving to the nose a flattened appearance, which tended very much to increase the deformity. The two upper incisor teeth had emerged from the gum of the insulated portion of bone before referred to. The accompanying engraving, *Pl. II., Figs.* 1 and 2, conveys a very good idea of the external appearance of these parts.*

Corresponding to this external deformity, was a cleft extending on either side through the alveolar process, the palatine process of the superior maxillary bone, the palate bone, the soft palate and uvula, forming a chasm about an inch wide. That portion of the bones which forms the nasal floor was deficient, throwing the two cavities of the nose and mouth into one.

On opening the mouth, the vomer could be seen throughout the whole extent, occupying its usual position, and forming a sort of septum between the two cavities, it inclined a little to the right, thus diminishing the width of the cleft on that side. The dividing line extended with remarkable exactness through the soft palate and uvula, separating them in the median line. When the mouth was wide open the opposing surfaces of the uvula would meet so as to present the appearance of an elliptical opening in the soft palate. This remarkable deviation from the natural structure of the parts did not appear to have any injurious effect upon the general health of the child, and when he came under my care he was as robust and vigorous as could be desired. He had never been able to take solid food, but ate very freely of Indian mush and milk, on which he subsisted. While eating, a portion of his food would frequently find its way through the nose.

After consultation with my father, Drs. Thomas Harris and J. R. Barton, it was deemed advisable to attempt an operation for the relief of this distressing deformity, and thereby to afford a chance for the subsequent closure of the cleft in the bones.

The age of the child, the remarkable deficiency in the lip, the small portion of integument to serve as the point of union, and the contact of this portion with the tip of the nose, determined us to perform

*The engravings are from an accurate drawing, executed by John Collins, of this city, a young artist whose success in this department, has already gained for him an enviable reputation.

three operations, with suitable intervals between them, rather than to attempt to accomplish the whole at once.

The object of the first operation was to unite the central flap of integument with the corresponding surface of the lip on the right side. This I performed, assisted by Drs. T. Harris and Norris, and in the presence of several medical students.

The free portion of the lip being drawn out by the fingers, its edge was excised by a firm stroke with a pair of sharp scissors; this exposed the greater portion of the surface which was to be attached to the opposite side. The edge of the upper extremity of the divided portion which extended under the nostril, was exposed by cutting upward with a small sharp scalpel, so as to secure union at its upper angle. The opposite side was denuded by a scalpel, the incision being made about four lines from the edge of the button-shaped process; the upper extremity was exposed by cutting upward under the nostril, as on the other side. Considerable hemorrhage from the coronary arteries followed these incisions; this was easily arrested by pressure between the fingers of an assistant. A piece of polished steel wire, the size of a common knitting-needle, about four inches long and sharp pointed, was then passed through the lip at its lower portion, about half an inch from its cut edge, carried over to the opposite side, and being inserted in a position to secure the accurate coaptation of the opposing surfaces, was pushed through this process between the gum and integument, and brought out at its opposite side. The parts being adjusted, they were retained in their position by a few turns of the silk ligature, while the needle was passed in a similar manner above. The ligature was then passed freely around the pins, taking care not to draw it so firmly as to impede the circulation between the cut surfaces. The wires were then cut off to within half an inch of the ligatures, by a pair of strong sharp cutting nippers, and the operation was completed.

Owing to the extreme restlessness of the child, and his disposition to seize the pins, we were obliged to secure his arms by a firm band passed around the body. His mother was directed to give him small and repeated doses of laudanum, until sleep was induced. Very little constitutional disturbance followed the operation, he passed a good night, and on the following day was lively and playful, and took his mush as usual.

On the fourth day after the operation, the little patient was feverish and restless, the lip was considerably swollen, and a few drops of pus were observed around the needles, circumstances which indicated the propriety of removing them; this was accordingly done in the

morning, and the parts covered with strips of adhesive plaster. In the evening the strips were taken off, bringing with them the ligature, and exposing a firm union throughout the extent of the divided surfaces.

At the end of fifteen days, the parts being firmly consolidated, and entirely free from soreness, a second operation was performed upon the left side. The success of this was rendered more doubtful from the relation which the parts now sustained to each other. The central flap which had been attached to the lip by the first operation, being, from its connexions, to a certain extent moveable, had been drawn from its position in the median line over toward the right side, and hence the distance between the surfaces, now to be united, was increased.

The operation was performed with the assistance of Dr. J. R. Barton, in the presence of Drs. Norris and Pepper, and several medical students. The limbs of the child being firmly secured, by placing him in a bag, the open end of which was drawn around his chest, the lip was first separated from the gum by a few strokes of the scalpel, in order to increase its mobility; its free edge was then clipped off with the scissors, the upper portion, under the nostril, being denuded with the scalpel, as on the opposite side. The corresponding edge of the flap was excised with the scalpel, but owing to the integument being drawn a little off from the gum, by its union with the lip on the other side, it was necessary to notch out a portion of the gum under the nostril, in order to present a raw surface to the corresponding side, with which it was to be brought in contact. The needles were then passed through the lip at least half an inch from its cut edge, and passed over to the opposite side, their points being brought out beyond the cicatrix which was made by the first operation. The two surfaces being brought into contact, the ligatures were applied in the usual manner. The great distance of the surfaces thus approximated, contracted the corner of the mouth to such an extent as to excite our fears lest the wires drawn upon by so strong a force, might cut their way through the soft parts before firm adhesion could be established.

Fortunately, however, this did not occur. The case progressed favourably, but little constitutional disturbance following the operation; and on the sixth day the needles and ligatures were removed, exposing a firm cicatrix throughout the divided portion.

The lip being firmly united, our attention was now turned to the nose. This part being united to the central flap, which had formed the point of union for the edges of the fissure in the lip, was now drawn downward and a little backward from its original position, (see *Pl. II., Fig.* 4,)

and made to assume a more compressed and flattened appearance, which is well represented in the engraving.

To remedy this deformity it has been recommended to separate the tip of the nose from the lip by an incision with a scalpel, and to prevent union by the first intention by the introduction of dressings between the cut surfaces. Several objections to this plan suggesting themselves to Dr. Barton, he has originated the practice of the ligature, which he has successfully adopted on several occasions, and which was used in the present instance. The objections referred to are the following:

Firstly. By making a straight incision between the tip of the nose and lip, even if the parts heal, without the occurrence of union by the first intention, the divided surface would present a sort of shelving edge, giving to the tip of the nose a pointed extremity, instead of presenting that rotundity so necessary to the symmetry of the features.

Secondly. The difficulty of maintaining the necessary dressings between the cut surfaces, especially in a restless child.

Thirdly. The occurrence of hemorrhage from a small vessel, which is necessarily divided in the operation, and which proves very troublesome to the surgeon, especially in operations upon children.

The ligature is free from any of these objections; is equally certain in its effect, and in the case of a restless child more so, and is very easily applied.

At the end of sixteen days after the second operation, the parts were prepared, and the operation was performed.

A curved needle, armed with a strong silk ligature well waxed, was passed about three or four lines behind the tip of the nose, the ends being drawn out, (see *Pl. II., Fig.* 3,) were firmly tied, so as to include the intervening portion of integument.

The parents were directed to draw upon the ligature every morning, to keep up irritation. At the end of two weeks the ligature had so nearly cut its way through, that a clip with the scissors, through the undivided part, completed the operation.

The effect of the operation was to liberate the tip of the nose from its connexion with the lip, and very much to improve the appearance of the child. The engraving conveys a good idea of the appearance of the parts, after the completion of these operations.

The influence which this operation, when performed at a very early age, may have upon the closure of the bony cleft is an important consideration. The rarity of this kind of malformation, and the very few cases in which the subjects of it are sustained during infancy, would perhaps prevent us from arriving at a conclusion on this point, sus-

tained by any considerable number of facts. It seems probable, however, that the firm union of the lip over the pliant bony structure to which it is attached, would, by its steady pressure, tend to mould the bones into their natural form, at least during that period where the growth of parts is constantly advancing.

In the present case the effect produced upon the bones in the short space of six weeks after the operation, was very gratifying. The anterior portion of the cleft on the right side, was very nearly obliterated for the space of at least half an inch, and the improvement on the left side was very obvious.

The result may, in part, be explained from the fact, that the insulated portion of bone, which projected forward in the centre of the chasm, was drawn backward toward the roof of the mouth, by the attachment of the integument covering it, to the edges of the fissure in the lip; hence diminishing the width of the bony chasm at its anterior portion. This change in the position of the parts would tend also to block up the opening between the nose and mouth in front, and thus to improve at once the speech and power of mastication of the patient. The effect of this change in the case before us, was very obvious. The little patient who, before the operation, had not eaten any solid food, now ate, with avidity, potatoes, apples, &c.

In the case of a young man, who was the subject of the form of hare-lip now under consideration, and who was recently operated upon by Dr. T. Harris, at the Pennsylvania Hospital, the same improvement was manifest in a very short period after the operation; the anterior portion of the fissure had almost closed up, and the speech and mastication of the patient were considerably improved before he left the hospital.

Another method of performing the operation for double hare-lip, has been recommended upon high authority, and occasionally practiced. It consists in cutting away the whole of the insulated portion of bone and integument, which projects in the middle of the chasm, and thus uniting the opposing surfaces of the lip by needles and sutures, as in ordinary cases. Several serious objections seem, to me, to exist against this plan, viz:

Firstly. By the excision of the central portion, the distance between the surfaces to be united is considerably increased; and hence the chances of union between them is diminished.

Secondly. If the first attempt at union should fail, and the edges of the wound should gap open, they must be again denuded, thus widening the breach still farther, and rendering the success of a second operation more doubtful.

Thirdly. Should the divided edges be firmly united, the anterior portion of the lip, being unsupported behind, would give to the mouth a flabby and flattened appearance, which, to say the least of it, would be very unsightly.

Fourthly. If the views expressed above, of the influence of this central abutment, in producing a closure in the bony fissures be correct, then its removal would be highly injudicious, as it would prevent the most important result which could follow the operation.

In adults, who are the subjects of this malformation, it is usual to unite the two sides to the central flap, at one operation. Where the parts are fully developed, and the patient is capable of appreciating the importance of doing his part, toward promoting the objects of the surgeon, this is perhaps the best plan.

It was successfully performed in two cases at the Pennsylvania Hospital, during the past winter, one a patient of Dr. Randolph, and the other of Dr. T. Harris. In the case of a child, however, the propriety of uniting one side at a time, is sufficiently obvious, upon the grounds already stated.

Case II.—The younger child was a female infant, of five months old, of delicate frame, and lax fibre. In this case the malformation was upon the left side, the division of the lip was as great in proportion to the size of the child as it was on either side in the other case. The fissure in the bones corresponded in width with that in the lip, and extended through the soft palate.

The cleft in the gum was of an irregular shape, the portion on the nasal side projected forward, and terminated in a pointed extremity of an angular shape, which approached very near to the opposing surface. The face on the deformed side was very much disfigured, one-half of the nose being smaller and sinking below the level of the other; the ear on this side was also considerably smaller than its fellow.

The child had been delicate from birth, and was subject to frequent attacks of diarrhœa and colic, for which the mother had frequently administered laudanum, sometimes in doses of twenty drops. Soon after their arrival in the city, the child became affected with diarrhœa, by which her strength was much reduced.

Enemata of rich flaxseed mucilage administered several times during the day, and a diet of arrow-root, or ground rice boiled in milk, was substituted for Indian meal gruel, upon which the child mainly subsisted. The large doses of laudanum, to which she had been accustomed, were omitted, and lac assafœtida was substituted.

Under this course the patient improved rapidly, and a day was fixed upon for an operation. Before the appointed time a relapse

occurred, of which she was relieved by the addition of $\frac{1}{8}$ gr. doses of calomel, to the other treatment, continued until the condition of the bowels was corrected.

12th Mo. 19th. Assisted by Dr. Kirkbride, and in the presence of several medical students, I operated in the following manner: The lip was dissected off from the gum to which it was adherent; its edges were then exposed with the scissors, the portion under the nostril being denuded with a scalpel. The cut surfaces were brought together, and pins of steel wire passed below and above; a waxed silk ligature was then applied with moderate firmness around the pins. At the close of the third day the pins were removed, the ligature remaining until the following day; the parts were secured by adhesive strips.

On the removal of the ligatures, the union between the divided edges was complete throughout the greater part of the lip. At the upper angle under the nostril, the edges were held together by a coating of lymph sufficiently firm to retain them in apposition.

Adhesive strips were firmly drawn over the wound, with the hope of establishing the union more firmly above. After this period the child became very restless and fretful, the diarrhœa returned, and frequent "crying spells" tended very much to disturb the dressings.

On removing the plasters on the 27th, the upper angle of the wound had separated to the distance of three or four lines, the edges below being firmly united. The idea of establishing union above by any mode of dressing, was now abandoned, and the wound was allowed to remain open until the soreness should so far subside as to admit of another operation.

At the end of about three weeks, this was done, by denuding with a scalpel the united portion, and passing a curved needle, armed with a silk ligature, through the lip on each side—the ligature was tied in front, and allowed to remain until it had cut its way through.

Before the wound had entirely healed the family left the city, but I have since heard that the operation proved entirely successful.

The faulty union after the first operation in this case, may be attributed mainly to the enfeebled state of the infant's system, a condition which would have precluded its performance had it not been that the parents were a long distance from their home, and were exceedingly anxious to have the operations completed before they returned. Another circumstance which appeared to me to favour this result, was the angular projection of the gum on the nasal side of the cleft. This projection formed a pointed extremity which pressed against the upper and posterior surface of the wound, and must have tended to prevent union at this point.

Art. VII. *Report of several Cases of successful operation for Club-foot by the division of the Tendo Achillis, with Remarks.* By W. Detmold, M. D., of New York.

Several notices have been given in this Journal of a new and successful operation for club-foot by the division of the tendo achillis, first performed in Hanover by Dr. Louis Stromeyer. This operation excites, at present, great interest in Europe, and justly so, as it affords the means of curing a deformity, even in an advanced period of life, which has hitherto been pronounced incurable. The long established and generally adopted notion of the incurability of club-foot, after the very first stage of infancy is passed, and perhaps, in some measure, the difficulty of undertaking an operation for its cure, merely from description, are probably the causes of this operation never before having been performed in this country, which at all times is prompt to adopt, from abroad, every improvement or useful invention.

This operation has shared the fate of almost every new discovery; in the beginning only a few, unprejudiced and convinced by facts, embraced it; a great number, who could not deny the facts, tried to depreciate its merits, by disputations as to its discoverer, and by terming it an obsolete and merely revived operation; but the greater number not believing in its practicability, violently opposed it.

We do not wish to claim the merit of the discovery for our friend Dr. Stromeyer, being fully aware that it has been attempted before by Michaelis and by Delpech. The division of the tendo achillis was, indeed, long ago recommended after the partial amputation of the foot, where the antagonist muscles to the gastrocnemii having lost their place of insertion yielded the stump of the foot to their contractions, so that the use of the foot became painful, and at last impossible. The slightest reflection will, however, show that this, although it led afterwards to the operation in question, has nothing to do with the cure of club-foot. Michaelis, in 1796, performed the operation on a club-foot; not having, however, a detailed report of this case at hand, we cannot state how far he succeeded. Delpech performed the operation after him, in 1816; and although he partly succeeded, after nine months intense suffering on the part of the patient, he met with such difficulties that he never attempted it again. These two cases are, we believe, the only ones on record until Dr. Stromeyer, in Hanover, took the subject up again in 1830, and adopting a new method succeeded with ease and safety. It is therefore surprising that Mr. Keate, one of the surgeons of St. George's Hospital, London, lately, after perform-

ing the operation in the manner recommended by Stromeyer, should mention it as an old discovery newly revived, which he had thirty-five years ago often seen put into practice. Now, we simply ask, is it not surprising, if the operation really had been so common as Mr. Keate states, that a man like Lord Byron, (whose right foot was thus deformed, and who considered it as such a misfortune, that it even gave a melancholy tinge to his whole character;* and whose mother, as well as himself, left no means of cure untried, and consulted the first surgeons of the time in England, as John Hunter, etc.,) was left without relief?†

The name of the inventor, however, can make no difference to the public, and we only hope that the operation may now become more generally known; and, therefore, lay before the professional public the following cases, for which we have within the last few months operated in this country, and which, we believe, (without claiming any merit for ourselves on that account,) are the first cases in which the operation has been performed on this side of the Atlantic.

Before entering, however, into the relation of these cases, a few general remarks on the subject may not be out of place, or unwelcome here.

The fact that the deformity was curable in infants, was alone sufficient to settle the question, whether the proximate cause of the disease was a defect of the bones of the foot, or an abnormal action of the muscles, a spontaneous subluxation. Were it a defect of the bones, all attempts at a cure would be vain. The object of our attention is, therefore, to regulate the abnormal muscular action; to bring by that means the bones into their proper relation and situation; and finally, to keep them so.

A superficial examination of the muscles of the leg will show, that those which form the calf, (the extensors of the foot,) are far superior in size and strength to their antagonists, the flexors; and, in fact, the bending of the foot does not require such a strong muscular apparatus, as the weight of the body, when thrown a little forward, aids the flexion of the foot, whereas in raising the body on the toes, the extensors have to support the whole weight of the body, and therefore require to be

* His (Lord B.'s) reverend friend, Mr. Becher, finding him one day unusually dejected, endeavoured to cheer and rouse him, representing in their brightest colours all the various advantages with which nature had endowed him, and amongst the greatest, that of a mind which placed him so far above the rest of mankind. "Ah, my dear friend," said Lord Byron, mournfully, "if this (placing his hand on his forehead) places me above the rest of mankind, that (pointing to his foot) places me far below them."—*Moore's Life of Lord Byron.*

† Moore's Life of Lord Byron.

trong. We believe there is no other part of the human body, where here is such a disproportion in size and strength between the extending and flexing muscular apparatus.

The extensors of the foot having overcome the contraction of the exors, the heel is drawn up, and the weight of the whole body, instead of resting on the whole sole, is supported by a small portion only f this part; namely, the inferior extremity of the metatarsal bones, he toes being naturally kept in a constant state of almost complete xtension, thus that species of club-foot is formed which is called *es equinus*. Or while the heel is drawn up, the point of the foot is t the same time drawn inwards, so that the weight of the body rests n the outer and upper part of the foot; this forms the highest degree f varus, the real club-foot.

After this state of things has existed for some time, the flexors of he foot being entirely out of action, lose all their strength, the muscles of the calf being in a constant state of contraction, are drawn up, nd become thinner, till at last the calf disappears entirely. The igaments of the tarsus and metatarsus are stretched on one side and ontracted on the other; that part of the foot which touches the ground ecomes covered with a thick callus. If the point of the foot or of oth feet is turned inwards, the patient, in order to get one foot round he other, is obliged to make a rotatory motion of the knee-joint, which ventually affects and weakens this joint very much.

In infants, where the muscles, ligaments, bones, and all the other parts concerned in the deformity, have not yet become consolidated in their abnormal position, a long continued use of proper bandages and machines may reduce the limb to the right shape; but after it has lasted for some time, every attempt to stretch the contracted muscles becomes so painful, that the patient cannot bear it; besides, the extension soon begins to act as a stimulus upon the contracted muscles, and produces new and convulsive contractions, which frustrate every attempt at a cure, and increase the evil. This circumstance has suggested the idea of dividing the tendo achillis, to counteract in this way the contractions of the gastrocnemii muscles. The operation, however, is here not the final aim; it merely produces a condition of parts favourable to the subsequent treatment; we allude to the cicatrix, which unites the extremities of the cut tendon; for the tendon is first divided, then the extremities are united again and healed, and after that the treatment of the disease begins.

At first sight it may appear paradoxical, first to divide the tendon, and then to heal the wound again; but a closer examination will soon develope the advantage of this proceeding. It is an established fact,

that muscles, tendons, and, in fact, almost all the different tissues when divided, heal by an intermediate substance, which, although dif ferent in the different tissues, and more or less analogous and ap proaching to their structure, is never identical with them, perhap with the exception of the bones; but in all or most other tissues, th cicatrix is formed by an intermediate substance, which is alway somewhat different from the original tissue. This intermediate sub stance is peculiar in the cicatrix of wounded tendons, and pos sesses different qualities from tendon, and among others extensibility This is observed in cases of rupture of the tendo achillis; for howeve well the ruptured extremities may have been kept together, generall after some time, the tendon, or rather the cicatrix, stretches.

Upon this fact the success of the operation in question is based We have stated, that if extension is applied to a contracted muscle the extension will affect more the soft and fleshy fibres of the muscl itself than the tougher fibres of the tendon. The muscle then wil yield, to a certain point, to the extending power; but as soon as tha point is exceeded, the extension begins to act as a stimulus to convul sive contractions. Now by interposing the extensible cicatrix, and i that way cutting off the effect of the extension from the contractil fibres of the muscle itself, we limit our power to that yielding part and easily attain our aim. At the same time, and by the same mean by which we stretch the contracted muscles, we relax, of course, thei antagonists, which meeting no longer an obstacle to their weak con tractions, gradually regain their strength.

The extension and consequent straightening of the limb must b effected gradually, as it is sometimes very painful; and of the whol number of machines, which we find in the armory of surgery, we ar confident that the one invented and used by Dr. Stromeyer is base upon the best principles, and will answer in most cases. We hav used the same from the beginning, but have subsequently made som material improvements on it, still keeping the same principles in view It would exceed our limits to give a minute description of this ma chine, which besides has been given by Stromeyer himself in some o his publications,* and we postpone the publication of our improve ments until further experience shall enable us to perfect them an confirm their value. Besides this of Stromeyer, different cases re quire different machines, which a little ingenuity, based upon a tho rough knowledge of anatomy, will readily suggest. But we canno let this opportunity pass, without saying a few words against a prac

* See this Journal, November, 1836, p. 250.

tice, which hitherto has generally been followed in such cases, and which seldom leads to any good result, but often makes the local evil worse, and frequently even affects and injures the general health; we allude to the practice of abandoning such cases of malformation to the ingenuity of a surgical instrument maker, or some other mechanic. A mere allusion to this dangerous practice we deem sufficient, to show how injurious it must be.

After having thus dwelt upon general principles, perhaps too much at large, which, however, the novelty of the subject will excuse, we will now lay down some rules for performing the operation, and give a few cases in which we have lately operated in this country with success.

The patient having been prepared for the operation, by being restrained from walking for a few days previously, and by daily bathing his feet, he is laid down flat on his face, an assistant presses the knee down upon the bed,—the surgeon with his left hand takes hold of the heel, and introduces a narrow, pointed, and curved bistoury, about one or two inches above the insertion of the tendo achillis, between the bone and this tendon, the edge of the knife turned towards the latter, and pushes it through, so that the point comes out on the other side, without making the cutaneous wounds wider than the blade of the instrument. The surgeon then draws with his left hand the heel down as much as possible, and thus divides the tendon, which separates with a jerk and a distinct noise. As soon as this is perceived, and not until then, the instrument is withdrawn in the same way in which it had been introduced. Precaution must be taken not to make the two cutaneous wounds larger than necessary, and not to get the point of the knife between the fibres of the tendon, but to go clearly round it, so as to divide it in its whole thickness. The wounds, which generally bleed very little, are covered with common court-plaster.

The next object is to bring the divided extremities of the tendon together, and we think the bandage best calculated to fulfil this, is a modification of Dessault's bandage for the rupture of the tendo achillis, with a bent splint over the knee, avoiding at the same time all pressure on the wound, as this is apt to produce convulsive contractions of the gastrocnemii muscles. This bandage leaves the wound free, and allows the use of cold fomentations, to keep down inflammation. After forty-eight hours the external wounds are generally healed, and the cohesion of the tendon is so far advanced as to admit the application of the extending apparatus, which at first must be put on loose, and gradually tightened; from time to time it is taken off, and the foot washed with camphorated spirits of wine, to prevent

excoriation. Generally in four or six weeks the foot becomes straight enough to admit of a common boot being worn, with a spring to it extending up to the knee, like the one on Scarpa's machine, to which we have added another spring, which aids the bending of the foot on the instep. Besides these springs we fasten the foot with three straps inside the boot, in its proper position. After this boot has been worn for four or six weeks, the patient generally can wear a common boot without any further precaution.

The treatment above described requires modification in different cases. The operation, for instance, is not at all limited to the division of the tendo achillis, sometimes the tendon of the tibialis posticus muscle has to be divided, sometimes the flexor longus pollicis, and different others, if they are so contracted, that a mere extending apparatus will not suffice.

We should add here, that the operation has been successfully performed on a child of one year, and on a lady of fifty-three years of age; besides a great number of cases of all ages between those two periods.

Case I. Finding when we arrived last spring in this country, that it would be difficult to introduce this operation, without producing facts in favour of it, and not being connected with any public institution, that might have facilitated our purpose, we looked out for an individual, willing to submit to it; and the deformity is so frequent, that we had not to seek long. We met in the street a poor boy, of the name of W. N. Quick of this city, whose left foot was a club-foot, and after some difficulty we succeeded in getting his own and his mother's consent to the operation.

The boy was fifteen years old; had a good strong constitution; and had been born with the deformity; he had suffered once from an abscess on the left thigh, which had left a small scar on the skin, and although the mother told us that it had been in connexion with his deformed foot, it seems to have been a mere superficial abscess. The mother being at the time of his infancy in better circumstances, had tried several means for remedying the deformity, and at last when the boy was about four years old, consulted one of the most eminent surgeons of New York, who advised some machine, which, however, was of no service. Since that time no further attempts were made to cure the deformity. The limb now presented a case of real club-foot, the heel was considerably drawn up, and the foot twisted round so that the outer and upper part of the foot, near the ankle, touched the ground; and consequently a thick callus had formed there. The inner margin of the foot was nearly bent into a right angle, and when

the boy stood with both his legs together, the toes of the club-foot were behind and above the inner ankle of the right sound foot. The foot possessed very little suppleness, so much so that a superficial examination might have led to the idea, that the bones of the foot had grown together in their unnatural position. The calf of the affected side was gone entirely.

As the mother of the boy lived in a damp cellar, a place not very favourable for our purpose, we lodged the boy in a respectable boarding-house, where, on the 8th of September last, we performed the operation in presence of Dr. Delafield, of this city. It was executed exactly in the manner already described; the cutaneous wounds did not exceed one-sixth of an inch, and the extremities of the tendon separated nearly two inches; however, with the bandage already described, we brought and kept them close together; and applied cold fomentations. Within forty-eight hours the external wounds united by the first intention; and the second day after the operation we put the foot into the machine. Our patient, although complaining of some pain from the extending apparatus, bore it altogether very well, had a good appetite, and seemed in every respect as comfortable as we could wish. We were, therefore, not a little surprised, when we found on the morning of the fifth day after the operation, that our bird had flown away, and left the nest empty. He had, in his new situation, suffered more from loneliness than pain, and determined to endure it no longer: he had himself taken off the machine, and walked home, about a mile's distance. Two days afterwards we found him out, and put the machine on again. Provoking as this circumstance was at the time, as it threatened to jeopard the success of our operation, we do not now regret its occurrence, as it was not productive of any bad consequence; and it furnishes us a proof, how speedily the divided tendon unites, and how soon the cicatrix becomes sufficiently strong, even to support the weight of the whole body. (In this case in three days.) Besides, it had a beneficial influence upon our treatment of these cases, by making us bolder in the use of the extending apparatus, not fearing to tear the new cicatrix. Without further interruption we went on stretching the foot, and on the 20th of October, about six weeks after the operation, we had the satisfaction to see the patient walk through the room, on the flat sole of a straight foot. After loosening, however, the machine, in which the foot had been kept very tight for six weeks, an œdematous swelling appeared in the leg and foot, which prevented us from putting on a boot; we kept the foot in a horizontal position in a pretty tight roller; and on the 8th of November the œdema had dis-

appeared, and we put on the boot already described, which the patient kept on for about three weeks, day and night; after that period we continued its use for a fortnight only during the day, and then the springs were taken off, so that the patient wore a common boot only with three straps inside, which, after another fortnight, were also taken out, and the boy is walking now without limping, and without any symptom of ever having had a deformity of his foot, which is so straight, that he is able to change his boots from one foot to the other; moreover the calf of the leg begins to enlarge. We have now the cast of his foot before us, taken five months after the operation, and the foot is perfect without exhibiting any other anomally, than a slight remnant of the thick callus on the outer and upper part of the foot, which although nearly gone, yet is not entirely absorbed. The two casts of the foot, the one taken before the operation, and the other five months after, exhibit an astonishing difference, and one such fact shows sufficiently what can be done in this way.

Case II. In September last we were consulted by Mr. H——h of this city, who had the misfortune of having among ten children, four born with both feet deformed. The family had tried every thing within their reach; and the eldest son, about eighteen, although his feet are still much deformed, and his gait very bad, has succeeded so far, that he is able to get his feet into boots, which give them, at least, a somewhat natural shape. With a girl of about nine years of age, the result was still more favourable, although even her feet are not straight; but with another boy of fifteen, and another girl of fourteen years, all attempts proved useless; we, therefore, directed our attention merely to these two.

Benjamin H——h, now past fifteen years, of a delicate constitution, born with two club-feet, exhibits a specimen of this deformity as completely developed as any we have ever seen. Both feet are alike; there is not the slightest remnant of a calf on either side; the heel is drawn up as far as possible about four inches above that part of the foot which touches the ground, the sole of the foot looking backwards and upwards, the tarsus has taken its place, and supports the weight of the body; consequently a callus has formed there, which is about an inch thick; a line passing over the sole, from the heel to the big toe, which in a well-shaped foot would be a straight line, describes here even more than a right angle; in consequence of which the big toe appears fully two inches longer than the little toe. The boy has always been very active; and notwithstanding this awful deformity of both his feet, has even been a good runner, a circumstance, which for our task of curing the deformity was any thing but favourable, as the

knee-joints had become so loose, as to allow a complete rotatory motion, and in standing, and bearing the weight of the body upon his feet, the knees would bend back into a very considerable angle.

If the reader has followed our description of this deformity he will think us perhaps rash and fool-hardy for undertaking to cure such a deformity of fifteen years standing; and if we look at the casts of the feet now before us, we confess ourselves, that only that assurance, which originates in previous success, could make even the boldest surgeon bold enough to meddle with it.

On the 27th of September, 1837, in presence of several physicians and surgeons of this city, we divided the tendo achillis of both feet, in the manner already described, and then applied the uniting bandage. Forty-eight hours after the operation the external wounds had healed, and we felt a sufficient quantity of plastic matter between the extremities of the tendons, to allow the use of the extending machine. Although there was not the slightest symptom of traumatic fever, still the pains attending the close confinement of the feet, and perhaps more than all that, the hope of getting cured of such a deformity, which worked strongly upon the patient's active mind, troubled his sleep, and frequently rendered him delirious at night when awake. Although we were not much alarmed by this, as we accounted for it in the manner alluded to, and the complete absence of fever, or other symptoms, justified our reasoning; still we loosened the bandages during the night, and occasionally took them off altogether. This, of course, retarded the progress of the cure; but another circumstance threatened to throw a still more serious hindrance in our way. One of our machines, not being made very accurately, pressed against the callous lump on the tarsus of the left foot; this, together with an exposure to cold, brought on an erysipelatous inflammation of the whole leg. We were obliged to take the machine off that foot, and feeling a yet indistinct fluctuation where the pressure had been, we applied warm fomentations. Within a short time a large abscess formed on that part of the foot, which we opened, and discharged from six to eight ounces of a thin matter. The freedom from pain and mobility of the articulation of the foot, proved that the abscess was only superficial, and that neither the bones nor the ligaments were concerned in it. Fearing, however, a tedious suppuration, we treated the abscess by compression, and had the satisfaction of seeing after three days, during which the discharge had been rapidly decreasing, that the whole cavity of the abscess had disappeared, and even the wound from the lancet had healed. Besides the loss of time and other inconveniences, which we escaped by this proceeding, we were for-

tunate enough to preserve the old and callous skin, which immediatel after could bear again the pressure from the machine; whereas if this ha been lost by suppuration, and been replaced by a new and tender skin the pressure would have kept it constantly irritated and excoriated Silently congratulating our patient and ourselves upon our success i this circumstance, we proceeded again with the extension, and abou ten weeks after the operation our patient began to walk, first with th aid of our modification of Scarpa's machine, with a spring outside th leg to keep the inner margin of the foot down, another spring along side of the foot to keep the point of the foot outwards, and a thir spring at the heel to aid the bending of the foot in the instep. We allowed the patient to walk with these machines about the house fo six weeks, and then put the first machines on again for a week, afte which time the feet were so straight, that the patient could wear the common straight boots with the straps and springs already described, in which he takes daily walks at the time we are writing this, and he will soon be able to change them for common boots. His knee-joints are recovering strength; his calves begin to grow; and from the appearance of the feet as they are now, it would be difficult to imagine that they had ever been as they were, so that the family requested us to let them have a cast of the deformity, "because they could not realize that the feet ever had been so."

Case III. Anna H——h, the sister of the last mentioned patient, fourteen years old, born with both feet deformed, exhibits in every respect the same deformity as her brother, only with this difference, that having walked less, her feet were more supple, and the calves had not so entirely disappeared. We divided both tendines achillis on the 22nd of January, 1838; and forty-eight hours afterwards put on our modification of Stromeyer's machine. Her constitution being stronger than that of her brother's, and the case not so bad, we were able to continue the extension without any interruption, and four weeks afterwards we saw the girl with straight feet, in common boots, walking through the room. The bones of the feet, however, had not yet become sufficiently confirmed in their new situation; we, therefore, after a few days, took the boots off again, and put her back into the machines, where she is still, while we are writing this; (the 3d of March, 1838.)

We should have been able to add another case, the child of Mr. O——y of this city, a boy about three years old, born with the deformity on the left foot; but a few days previous to the time appointed for the operation, the boy was attacked with scarlet fever, which obliged us to delay it. The case does not differ from the former

ones, except in the age of the patient, which is, of course, in his favour. The boy having now recovered, we shall operate on him in a few days.

We will conclude this report by a brief notice of a few cases, in which we have cured the deformity in infants, without an operation. These cases present nothing peculiar, except, perhaps, the shortness of time in which we succeeded.

Case I. Towards the latter part of October last, Mr. P——s of this city, asked our assistance in behalf of a child of his, which was born with two club-feet. The babe was a boy three weeks old; the feet were turned up on the inner margin and the toes turned in, while the heel was drawn up. We used machines, constructed on the same principles, as those which we use after the operation in grown people; and after three or four weeks the feet had become perfectly straight, but had still a tendency to fall back into their former position. We had common boots made for the child, and fixed both feet together by two thin iron splints, which were fastened under the soles; the one splint, six inches long, was fastened under both heels, and kept them the same distance apart; the other seven and a-half inches long, was fixed under the point of both feet, and kept them at the same distance from each other. By these means we kept the soles on a horizontal plane, and the longer splint kept the toes farther apart than the heels. Each splint has two horizontal joints, which arrangement allows a motion of the feet similar to that of walking, always preserving, at the same time, the right position of the feet. We have not the slightest doubt that by continuing the use of this simple instrument for some length of time, the child will begin to walk as if the feet never had been deformed.

Case II. In the beginning of January last, Mr. H——s of this city, applied to us with a child, a boy six months old, who was born with the deformity only of the left foot. The family had for more than three months, by the advice of a surgeon of this city, bandaged the leg and foot together on a straight splint, in consequence of which the foot was not so much turned in, but the heel was drawn up to such a degree, that it was scarcely at all salient. In the beginning we doubted whether we should be able to bring the heel down, without dividing the tendo achillis, particularly as the straightness of the foot made it exceedingly difficult to keep a machine or bandage on, the foot slipping out constantly. However, the consideration of the tender age of the child made us persevere in our attempt; and after using the extending apparatus for about six or seven weeks, not without a good deal of pain to the little patient, we brought the foot into a right angle with the leg. The family then left the city, and fearing that the heel, when left alone, might be drawn up again, we advised

the use of a gaiter, laced on the tarsus, with a stiff sole; to this and to a girdle round the ankles, a semicircular spring was fastened, with its two ends resting with its middle part on a small cushion on the tarsus, by which means we kept the foot in constant flexion.

Case III. In February last we were called to see Mr. L——d's child, of this city, a daughter, one year old, with two club-feet. The family had tried already different means without success. Both feet are alike; but this case differs from the others, as in addition to the deformity of the whole foot, both big toes are in a state of utmost extension. This is an instance, where, if the child had been allowed to grow up so, the division of the tendon of the extensor longus pollicis muscle would have been necessary, besides the division of the tendo achillis. Although we believe Dr. Stromeyer generally operates as early as at the age of one year, we tried to do without it; and by the mere use of machines the feet have improved within three weeks so considerably, that we anticipate certain success.

A few days ago Mr. R——n of this city, desired us to attend a child of his, three months old, with two club-feet. But the child's general health is so bad, that we doubt whether it will live; we, therefore, have advised the family to wait, till the child should grow older and stronger; fearing that the use of the machines might injure it; and that death from disease, which seemed very probable, might be ascribed to the use of the machine.

New York, March, 1838.

Remarks on the subject of the preceding paper. By the Editor.

The division of the tendo achillis for the cure of club-foot, has attracted much attention in England and France within the last two years; and the results of the operations performed in those countries have been, for the most part, so fortunate that it may now be considered an established therapeutic measure. Some particulars in regard to the history of the operation, in addition to those furnished by our correspondent, we have thought, therefore, would not be unacceptable to our readers.

The operation was first performed by Lorenz, a surgeon at Francfort, who, as appears from the case published by Thilenius in 1789, divided the tendo achillis of a girl of 17, in 1784. He made a cut through the integuments and tendon from behind forwards, and the heel descended more than two inches. A bandage was immediately applied, and the wound was closed in six weeks.

Next it seems a Dr. Michaelis, of Marbourg, adopted a similar proceeding; but he only partially divided the tendon, leaving the rest to be gradually extended. In one case, where there was an inclination of the foot laterally, he divided the tendon of the tibialis anticus. Another plan was invented by Sartorius, of Nassau, in 1812; he made an incision along the back of the tendon, opened its sheath, and then divided it from before backwards on a director, and applied the apparatus immediately.

Delpech was the first who recommended the division of the tendon without dividing the skin over it; and he first put this plan into operation in 1816, plunging a narrow bistoury before the tendon through the leg, so as to cut the skin for about an inch on each side, and then dividing the tendon with a convex-edged bistoury, without dividing the skin behind it. He then kept the foot *extended*, that the ends of the tendon might unite, and did not attempt flexion, and the stretching of the bond of union, till the 28th day. This last proceeding was very painful, and was attended with difficulty, the wounds not healing for more than three months; however, twenty years after, M. Bouvier found the patient walking very well.* This operation was not sufficiently satisfactory to induce the author, or others, to repeat it, and it seems to have been abandoned until revived by Dr. Stromeyer in 1830. This surgeon made some essential improvements on the plan of Delpech, and in 1833–34, he published six cases successfully operated upon by his method. This method has been so fully exposed by our contributor, and in a preceding number of this Journal, (Nov. 1834, p. 247,) that it is unnecessary for us to repeat the details. It may be well, however, to state that instead of making two incisions by the sides of the tendo achillis, as was done by Delpech, he used a narrow knife with a convex cutting edge, which he plunged in front of the tendon, with its edge backwards, and just pierced with its point the integuments on the opposite side. He then divided the tendon alone, and commenced to flex the foot on the tenth day in adults, and the fifth in children. In one case he divided also the tendon of the flexor longus pollicis, and in another the tendon of both flexor and extensor of the great toe.

Dr. Stromeyer has also extended the same principle to the treatment of deformities of the knee-joint, and has divided the tendons of the semimembranosus, semitendinosus, and biceps femoris muscles, and by this means cured contractions of the knee-joint, some of them so called anchyloses, of many years standing.† If, therefore, Dr. Stro-

* See Report read by M. Emery to the Royal Academy of Medicine of France, August 12th, 1837, upon the method adopted by M. Bouvier.

† W. J. Little, M. D., in Lancet, January 17th, 1838, p. 632.

meyer has no claim to having originally suggested the division of the tendo achillis for the cure of club-foot; he has at least the merit of having perfected, to a certain extent, at least, the method of operating; and of establishing by the success with which he has performed it, the safety and advantage of the operation.

In England the Stromeyerean operation appears to have been first and most frequently performed by John Whipple, Esq., of Plymouth. We have already noticed two of his cases, (in our No. for Aug. 1837, p. 513,) and shall now give additional particulars relative to his operations. The method which he has adopted differs somewhat from that of Stromeyer. It is as follows:

"The foot being extended as much as possible, the integument posterior to the tendon is pinched up about two inches above the os calcis, in order to separate it from the latter, when a narrow-bladed knife, with a rounded cutting extremity, is passed from within obliquely downwards and outwards, *between* the integument and tendon; and as soon as the point of the knife is felt under the integument, and on the outer side of it, considerable flexion of the foot is made by an assistant, the point of the knife being at the same time depressed, so as to bring it in contact with the tense tendon, when, by firmly depressing and withdrawing the instrument, the object is instantly effected. This is made evident by the sudden jerk with which the heel is brought down, in some instances two or three inches, as in cases of talapes equinus.* The knife should be passed from the inside outwards, for this reason: should you depress the point more than is necessary to divide the tendon, there would be no risk of wounding the posterior tibial artery, which would be the case were you to introduce your knife from without inwards; and it is essential to depress with some force, or you leave undivided some fibres of the tendon most remote from your puncture, and have to introduce your knife again (not a little embarrassed at your own bungling) for the purpose of dividing them. However, although the point of your knife be dipped some distance anterior to the edge of the tendon externally, in order to secure its division, this will not be necessary internally, as, the moment you feel your object effected, you discontinue the pressure on the knife, and withdraw it carefully, so as not to enlarge the integumental opening."

This, he thinks, by far the best mode of operation, "as by this means you pass your knife across a relaxed tendon, which, when rendered tense, is brought up to meet the edge of the instrument, and therefore more readily divided than when you pass your knife between it and the deeply-seated muscles. Another objection to the latter plan with me is, that the tendon is in such close contact with the integument, that you run a great risk of dividing or partially dividing, the latter, which, from the years of contraction to which it has been subjected, is rendered exceedingly tense when the foot is flexed. In upwards of thirty cases which I have examined, I have found no exception

* That variety of club-foot, in which the foot is permanently extended, so that the toes only can be put to the ground.—Ed.

this. Again, where the toes are the points of support, the tendon will be ound nearly embraced by the integument, as in the corresponding tendon in he horse, though certainly not to such an extent. I must not leave this part f the subject without a remark relative to the division of other tendons appa-ently implicated, without the division of which it might be imagined that ttle would be gained; and, indeed, such was my own impression after the peration in the second case I have recorded. I had promised that one tendon nly should be divided, but I confess that I left my patient with regret at hav-ng so given my word, and determined to gain the consent of the parents to the ivision of the others, if the muscles did not elongate by steady and constant xtension, as I at first conceived they would, looking upon them as secondarily ffected, their contractility being favoured by the rolling inwards of the foot. few days, however, served to remove all doubt from my mind, as they were vidently relaxing. I abandoned then the idea of their division being necessa-y, and as yet I have had no occasion to regret it. I am free, however, to cknowledge, that it might be the means of a more speedy alteration of the hape of the foot; yet the chances of inflammation, together with the weakness which a want of union would necessarily induce, are sufficient reasons for its ivision not being attempted. No doubt can exist of its impropriety in cases of talapes varus,* as will be illustrated hereafter.

"My reasons for dividing the tendon obliquely are as follows:—First, by so doing you have a larger surface for nature to carry on her operations on; se-condly, you have the obliquely divided tendon in nearer approximation, and thereby secure a firmer ligamentous band than in the transverse division; and thirdly, the application of the instrument does not separate the lips of the wound—a desirable point, as the sooner it heals, so as to prevent the escape of lymph, the better. The puncture is dressed with adhesive plaster, and the instruments applied at once, as, where this has been deferred, the act of stretching the inflamed part has caused considerably more pain than the opera-tion and early application combined. Much care and attention are required for the first three weeks or month, in order to keep the heel well down. Every thing depends on the heel and instep straps, and neither the fears and doubts of the surgeon, nor the ill-timed meddling of the parents, must interfere with the application of these straps; for, however aggravated the case may be, the removal of the deformity by proper treatment is certain. I know of no instance where patience is more necessary to the surgeon than in treating these cases; every thing is to be gained by it; for, by strapping too tightly, and screwing too firmly, vesications are produced, which compel you to remove every thing for their cure, and you lose more in twenty-four hours than you have gained in a week. Therefore, all you can do is to secure the heel firmly to the iron-sole, and to screw the plate so that it may merely *rest* on the cuboid and tarsal bones; then, from day to day, to draw in the strap a little tighter, so as to bring the end of the splint to the knee: a little pain and inconvenience are of course attendant upon this proceeding, but provided it does not produce vesica-

* That variety of club-foot in which the foot is turned inwards.—Ed.

tion, this cannot be of any consideration when put in competition with the i portance of the result."*

The following are the details of the eight cases upon which M Whipple has operated, as given by him in the *London Medical G. zette* for September last.

"Case I.—William Northmore, aged nine years, a remarkably fine boy, so after his birth was observed to point his toes in an unusual degree, which, ho ever, could be altered by forcibly flexing the feet. The opinion first given wa that when he began to walk this appearance would cease; the contrary, howeve was the case; for as he advanced in age the deformity increased. Various med cal men were consulted for him, and recourse was had to sea-bathing, embroc tions to the spine, and the usual means of removing spinal irritation. Th treatment was persisted in for four years, but proving utterly useless, all furth attention to the case was suspended for some time. He was afterwards taken London, where the old treatment was again resorted to, in conjunction with rig confinement to the inclined plane. This was pursued for twelve months, and th little fellow's health was much impaired, without any alleviation of the deformit This treatment was therefore discontinued, and when he had in some measu regained his strength, he returned to the country, and was allowed to resume h crutches, and to exercise himself by their support.

"It was two years after this that I was desired to see him, and, on examin tion, conceived that the disease was not dependant on the spine, but solely co fined to a shortened condition of the gastrocnemii muscles. Having ascertaine that the action of the ankle-joint was perfect (which was done by flexing the le on the thigh, when the foot could be brought at right angles with the leg), advised a division of the tendo Achillis, and the application of an apparatus fo sustaining the foot in its natural position, and trusted to nature for a sufficien supply of ligament to fill up the space between the divided ends, which would b drawn asunder at least two inches. Twelve months, however, elapsed afte this advice, when the parents again desired me to do what I could, so that would promise not to render the boy worse than he was. This being impossible as he could not stand for an instant alone on his widely-extended toes, and ha no mode of progression but by a simultaneous advancement of both legs, when h was supported by his crutches, I designed an apparatus for the legs, and operate in the mode described:—The feet were immediately restored to their natural po sition, and there retained, and gradually flexed from day to day by one or tw turns of the screw, in proportion as the long flexors of the toes, &c., relaxed. A the end of three weeks he stood alone perfectly steady without any support, no having, however, the slightest idea how walking was to be effected; and five week after the operation, when supported in order to assist his locomotion, he invariabl lifted the legs as before. Much trouble was required to prevent this, by holdin one foot firmly to the ground, and then lifting the other from it; in fact, instinc seemed never to have led him to the lifting of one foot at a time. He was there fore placed under a sergeant of the Marine corps, thanks to whose assiduity he i now (thirteen months from the operation) able to walk some miles without assist ance or support."

"Case II.—M. Gennis, aged eight years, a delicate child, walked well until tw years and a half old; she then had an attack of fever, and when she recovered was found, while standing, to have one heel drawn up about an inch from th ground, so that she walked as a person suffering from disease of the hip-joint i its shortened stage. After some time, from this contraction increasing, the foo gradually fell over on its side. Instruments were applied to support her ankle which, failing of success, and causing suffering from their weight and pressure a boot was substituted, which did not prevent her from ultimately walking on th cuboid and metatarsal bone of the little toe. On examination, I found the hee one inch and a half from the ground, with extreme tension of the tendo Achilli and of the tibialis anticus (as referred to previously.) In this case the tendon wa divided as in the preceding, and the apparatus (No. 2) immediately applied. A

* London Medical Gazette, September, 1837.

the expiration of ten days, the inflammation having totally disappeared, she was given a crutch, and allowed to move from room to room. At the present time the difference in the shape of the feet is very trifling, and, were it not that the affected foot is rather shorter than the other, a casual observer would not perceive a difference in their form."

"Case III.— —— Mortimer, aged 28 years, was observed to have talapes equinus, though in a trifling degree, from birth, the heel, when I first saw her, being more than two inches from the ground: the pain in walking even a short distance caused such distress in the whole limb (the muscles of which were exceedingly attenuated, particularly in the leg) that she seldom took exercise, and readily assented to any operation that would alleviate her condition. In her the tendo Achillis was unusually large, out of all proportion to the muscle, and there was considerable thickening of the cellular tissue in its neighbourhood.

"I operated by the oblique incision, and I particularize this to show that the subsequent inflammation has nothing to do with the size of the tendon to be divided, as, at the end of four days, there being no effusion, nor inflammation enough to produce ligamentous deposit, I extended and flexed the foot briskly, in order to excite some action in the part,—a proceeding which had the desired effect, as it was followed by slight tumefaction and pain. She was kept in bed three weeks (as the limb felt heavy and weak), when she was permitted to move about with the apparatus still applied, which was continued for five weeks only, in consequence of union having taken place. She now walks well, and without pain."

"Case IV.—William Greeny, an intelligent boy, aged eight years, was born with talapes varus of both feet. Adhesive plaister, cardboard splints, &c., were resorted to without benefit, and therefore abandoned. When fifteen months old he walked alone, completely resting on the cuboid bones. The usual club-footed boots were worn from that time, and when I was consulted nothing of this species could exceed the deformity. The great toe pointed to the opposite ankle; the sole of the foot backwards. Two large bursæ over the cuboid bone formed the cushion of support and defence from pressure, and in walking the toes of the one foot were lifted completely over the other. The extensors and flexors of the thigh were immensely developed; in short, it was an extreme case of the sort. Here the only tendon which appeared implicated was the tendo Achillis, which was divided, and in this instance (from being disappointed by the maker) the apparatus was not applied for three days: the pain they caused, however, was severe, from stretching the integument covering the tendon, to which latter it was firmly adherent. The integument between the inner ankle and great toe produced much uneasiness from the same cause. Frictions, with oleaginous embrocations, were productive of much comfort and ease. The improvement in the shape was imperceptible, as all my attention was directed to the main point—that of bringing down the heel before firm union had taken place between the ends of the divided tendon. At the present time, seven weeks from the operation, the soles of the feet are on the ground, and the improvement is very gratifying to all who have an interest in this case. This little fellow was confined on the sofa seventeen days, in order to afford every advantage in drawing down the heel.

"This case has fully borne out my conviction, that every case of talapes varus, if not arising from cerebral or spinal irritation, can be cured by steady attention and perseverance on the part of the surgeon; and that to him alone, and not to the operation itself, is all blame due if he fails of success."

"Case V.— —— Brady, between two and three years old, the child of a private of the 43d regiment, was afflicted with congenital club-foot, talapes varus, and had worn instruments from birth. Here, the leg, as usual, was much wasted, and presented the ordinary appearances, though not in an extreme degree, from having always been carefully attended to by a fond mother, under the inspection of military surgeons. The sole cause was the same as the preceding, which, when removed, allowed the foot to be immediately restored to its natural position. The usual instrument was then applied, and at the expiration of ten days firm connexion had taken place; at the end of three weeks not the smallest deformity was discoverable.

"From this result the deduction is, that infancy is the time most favourable for the operation; nor did she, although so young, suffer in the slightest degree from the apparatus."

"Case VI.—William Stephens, a delicate-looking boy, aged seven years and a half, born of healthy parents, was observed at his birth to point his left foot, which so increased, that when old enough to walk, all attempts to make him bring his heel to the ground were unavailing; therefore he, like many others, was allowed to go about as he best could. And at the time I saw him, his foot, while standing, exhibited one of the worst forms of talapes equinus, the dorsum of the foot being in a right line with the leg, with considerable wasting of the latter. On the division of the tendo Achillis, the foot was instantly brought into its natural position, and there retained by the apparatus: he was confined to his bed five days, and then allowed to get up and move about his chamber with the assistance of a stick. At the expiration of three weeks all support was taken from him; and at the end of five he walked tolerably well, unassisted in any way. I would remark, that the ligamentous connexion, in this case, is not above one half the size of the tendon, which I conceive to arise from the division being made transversely, and therefore allowing only one half the surface, which would have been formed by an oblique division, for the pouring out of the animal glue."

"Case VII.—George Truscott, 14 years old, son of an artificer in the Royal Naval Yard, Devonport, had congenital club-feet. For some time he wore irons, but as he grew up they became a source of pain and annoyance by their pressure, and were in consequence left off. For years he walked with the large flat-heeled boot generally adopted on these occasions; and when he was presented to me I found that he had talapes varus in its most aggravated form. In few words, it was a case similar to that of Greeny, so that nothing had been gained by the use of instruments in the early period of his life. Here, as in Greeny, no other tendon was materially contracted, but the integument considerably so. The operation was performed as before, and he was confined to his bed a fortnight, in order to allow the irons to be firmly applied, with the view of keeping the heel well down: this it completely effected. Some weeks have now elapsed; the soles of his feet are facing the ground, and there is considerable improvement in every way. He walks about with the apparatus well, and, as in all the cases of this kind, rapid absorption of the bursæ is taking place."

"Case VIII.—The result of early operation is strongly exemplified in the following case:—The patient, Charlotte ——, of Newton Ferris, being 14 months old, with congenital club-feet, so that even at that age, while attempting to sustain the body, the side only of the foot rested on the ground, the sole facing backwards, &c. At the time of my being consulted, nothing had been done to remedy the deformity. The child being in vigorous health, I did not hesitate to operate: the experience of my previous operations, none of which were followed by the slightest disturbance (notwithstanding the irritable temperament, and violent temper of some of my patients,) I considered as justifying my proceeding without delay. The foot, in one week, had gained its natural position, and at this period, the 20th of July, seventeen days from the operation, there is scarcely a perceptible difference between this and the originally sound foot. Indeed, so convinced am I of the little risk attendant on the use of the knife in these cases, that, were the two first teeth cut without convulsions, I should never hesitate in recommending the operation; yet I am of opinion that if it be done just before the child first attempts to stand, every desirable end will be gained.

"It will be remembered that, in stating the mode of proceeding in the application of the apparatus, particular attention has been drawn to the extreme caution requisite in order to avoid undue pressure causing vesication and gangrene, the miserable effects of which have been exemplified but too strongly in the following, my last case; and although caused by the tacit concurrence of the parents with the boy's wishes, have occasioned me much trouble, anxiety, and disappointment. I shall relate the case in full, in order to guard others on this most important point."

"Case IX.—William ——, aged seven, was operated on the 4th of July: the instruments were not applied until the following day, as they could not be got ready, and the father wishing to be with the child during the operation, and having business to call him home I acceded to his wishes. The apparatus was adjusted in the usual manner, though with much pain in the divided tendon, which, however, ceased in two or three hours. Directions were left that the knee-strap should be tightened by *one hole* early in the evening, and, to my surprise, on seeing

him the same night, I found that, in his anxiety for a speedy cure, he had drawn the side-iron of one leg close to the knee, yet perfectly uncomplaining of pain under the pad. I determined on removing it in order to see the degree of pressure on the cuboid bone, which I found so considerable as to produce a purple hue of the integument. The apparatus was discontinued, and a spirit wash applied for a short time, when the surrounding parts becoming inflamed, antiphlogistic measures were had recourse to; but, in spite of all our exertions, considerable sloughing came on over the tarsus, so that all attempts at removing the deformity were of necessity abandoned for the present. There was not, however, very much constitutional irritation; the part has now separated, granulations are springing up, and no doubt remains of the wound kindly healing. Thus, then, will be seen the vigilance and caution which such cases require; on them, and on them alone, depends the credit of this important and happy operation."

Dr. Little of London, who had been himself afflicted with the deformity under notice, from which he was relieved by Dr. Stromeyer, has successfully treated seven cases of club-foot by dividing the tendo achillis, according to the plan recommended by the last named surgeon; in one of them, division of the tendons of the tibialis posticus and tibialis anticus, was also required.* Of these cases we find two only on record. The first of them was the eldest son (æt. 14) of George Ray, M. R. C. S., of Milton, Kent.

The subjoined account, by the father, of the condition of the patient and the details of the operation, is extracted from a communication to the Lancet.†

"The following will shew the state of the foot prior to the operation:—In the erect posture the patient appears to be simply standing upon the toes and ball of the foot of the affected limb, the heel being drawn up by the muscles of the calf as high as possible, not touching the ground by three inches; in consequence of the extreme rigidity of the tendo-achillis and gastrocnemii muscles, it is impossible to place the foot in its natural position by bringing down the heel. In walking the patient limps a good deal, and treads on a very small part of the sole; there is not much inclination of the foot inwards, though he treads more upon the ball of the little toe than of the great toe. In the act of walking there is no bending at the ankle-joint. Although the entire affected extremity is rendered longer, through the extension of the foot, the leg is, in reality, somewhat shorter than that of the opposite side. The tibia and fibula are also more slender; the inner malleolus presents itself more anteriorly, and the other more posteriorly, than natural. The heel being drawn up as much as possible, causes the foot to appear to be a continuation of the leg; it is, in fact, nearly in a straight line. The arch of the foot is much greater than natural; the tarsal bones, therefore, present a great projection upwards; the affected foot is an inch-and-a-half shorter than its fellow; the muscles of the leg are much less developed than those of the sound limb; there is no paralysis of the tibialis anticus, peronei, or other muscles on the front of the leg; he can put them in action at pleasure, without, however, being able to move the foot much.

"On the 1st of May (in the presence of my friend Mr. Kingdon, Mr. Hamilton, of the *London Hospital*, and myself) Dr. Little divided the tendo achillis, about an inch and a half above the malleolus, by introducing a very narrow, slightly curved bistoury between the tendon and the deeper seated muscles and tibial vessels, directing the edge of the knife against the front of the tendon, dividing it from within outwards, leaving the skin covering the tendon untouched. The section was accomplished most skilfully, and the *minute* puncture in the skin was covered with a strip of adhesive plaster, and a loose bandage was applied round the foot and leg. Any separation of the divided ends of the tendon was prevented by placing the

* Lancet, 15th July, 1837, p. 608.

† Ibid. p. 589.

foot in its deformed position upon a stiff paste-board splint, applied along the outer side, and by adjusting the limb, with the knee bent, upon a pillow; on the second day the report was that he had had no pain or tenderness, and would not have known that anything had been done to the limb but for occasional contractions of the muscles of the calf, they having lost their fixed point.

"3d day. The puncture (which is inconceivably small) was found agglutinated, although not firmly cicatrized; the application of the extension foot-board was consequently deferred another day or two. The ends of the divided tendon cannot be felt, owing to the effusion of coagulable lymph which is necessary for its perfect re-union.

"4th day. The puncture firmly cicatrized, and Stromeyer's foot-board applied. The boy is perfectly well. The handling of the foot preparatory to the application of the apparatus, and the attempt to draw the heel down, produce no pain.

"10th day. The stretching of the lymph effused between the ends of the tendo-achillis, the elongation of the contracted ligaments of the ankle-joint, and the consequent bending of the foot upon the leg, have been gradually continued, so that the foot at present is nearly at a right angle with the leg, and all this has been effected without pain. He has been able for the last two or three days to walk about the room, with the foot-board, which diminishes the irksomeness of wearing it, and assists much in bringing down the heel to the ground.

"14th day. The foot is completely at a right angle with the leg.

"19th day. To-day the use of Stromeyer's foot-board is partly discontinued, and he wears in its stead Scarpa's shoe, modified by Stromeyer, which tends better to overcome the too great curvature of the bones of the tarsus, now that the foot is bent to the right angle. He walks about in it very well; the entire sole and the heel touch the ground; nor does the foot, when removed from all apparatus, return to its vicious position. The arched form of the dorsum of the foot, and the inclination of the front row of the tarsal and metatarsal bones, inwards, is now more striking to the casual observer than before; but Dr. Little informs me that the former will be gradually overcome by walking upon the entire sole; the latter, to a considerable extent, by persevering in the use of Scarpa's shoe.

"At the end of six weeks and a few days my son returned home, and has since been steadily improving. He continues to wear Scarpa's apparatus, by night, and, during the day, a common laced boot, with an iron stem on the outside of the leg; his lameness is very slight, and becomes less daily, but it must be expected that until there is greater flexibility of the ankle-joint, less tenderness of the sole (which, be it remembered, never before touched the ground), and the different muscles, ligaments, and bones, have had time to accommodate themselves to the entirely altered state of things in the limb, he must go halting."—*Lancet*, July 15, 1837.

The subject of the second case was a medical man, Thomas Inglis, M. D., of Glasgow; and the following is the account of his case as related by himself.

"I laboured under contraction of the gastrocnemii muscles of my right leg from my earliest years. When standing erect, my heel was about an inch and a half from the ground; and when I walked, almost the only part of my foot that touched the ground was the ball of the little toe. I was obliged to use a stick, and suffered great uneasiness. I went to London, and placed myself under the care of Dr. Little. This gentleman, whose numerous operations of this nature have brought the subject of curing these deformities, *surgically*, fully under the notice of the profession, in your columns, suffered, as you are aware, from the same lameness, and had the operation of dividing the tendo achillis performed upon himself, by Dr. Stromeyer, in Hanover, the *true* inventor of the method, about fifteen months ago. Dr. Little, to whom I beg in this, the most public way in my power, to offer my grateful acknowledgments for his kindness and attention, while under his care, performed the operation in his usual skilful manner, on the 11th of August last. I sat upon a sofa, one assistant supported my knee, and another held my foot, and endeavoured to bend the ankle as much as possible, so as to render the tendon tense, while Dr. Little, resting one knee upon the floor, passed a narrow, curved bistoury across the tendon, between it and the deep vessels, nerves, and muscles, from within outwards, about two inches and a half above the os calcis,

and divided it in withdrawing the instrument. As soon as the tendon was divided, it gave a crack, which was distinctly heard by all those around, and the separated ends of it could be easily felt with the fingers. The foot was bandaged, and allowed to remain at rest till the 14th, when the small puncture having cicatrised, the foot-board was applied to make the necessary extension. The heel came gradually down, and on the 17th, the foot was nearly at a right angle with the leg. A few days later, the foot was as much bent at the ankle-joint as that of the opposite limb. I have been walking about for the last four weeks. I find my limb acquiring both strength and substance, and the condition of the gastrocnemii and other muscles enables me to stand upon the limb, and move it in every natural direction. I may now say, that I am not only free from deformity, but enjoy an ease, freedom, and power in locomotion, such as it was never my lot to enjoy at any previous period of my existence."—*Lancet*, October 28, 1837.

Dr. Little has also imitated Dr. Stromeyer's treatment for contraction of the knee. He has divided the tendons of the semimembranosus, semitendinosus, and biceps femoris, in the popliteal region, in the case of a young lady, whose knee was contracted to an angle less than a right, the result of former disease of the joint, which had involved the ligaments and the bones, evinced by partial displacement of the articular ends, and by several cicatrices adherent to the bones, where formerly necrosis had taken place. The disease had rendered her incompetent to exert locomotion, except with the aid of crutches, unless, indeed, she hopped upon the sound leg. The small wound healed immediately; and at the present time, (six weeks after the operation,) the leg is very nearly in a straight line with the thigh.*

In France the operation has been performed by Bouvier,† Duval, and Roux. The former first performed the operation in 1835, and has since repeated it several times; the exact number we have not been able to ascertain.

"The method of M. Bouvier consists in making but one opening in the integuments, and that on the inside, so as to admit a very fine probe-pointed bistoury to pass across in front of the tendon, while the foot is moderately flexed. He then, with the convex edge of this bistoury, cuts across the tendon, and immediately applies the apparatus for maintaining the foot in a state of complete flexion. In one case he divided the tendon from behind forwards. The advantages of his mode are stated to be, 'that but very little of the cellular tissue surrounding the tendon, which he considers to be of great importance in the process of reproduction, is divided—that the pain is the least possible—and that, from the few vessels divided, there is very little subsequent ecchymosis. The immediate employment of the apparatus to maintain the proper position is less painful, and more certain and rapid in its results, than when it is left for several days, and there is no danger of the parts left between the separated ends being unable to effect the reproduction of the necessary firm tissue. The certainty of their capability to do this is proved by the cases of Lorenz and Sartorius, and by numerous cases in which a considerable portion of the tendo achillis had

* Lancet, 27th January, 1838, p. 632.

† See this Journal for May, 1837, p. 232.

been lost, and yet complete recovery had taken place: in support of this, he cites cases published by Molinelli, in the "Mémoires de l'Academie de Bologne;" others cited from Clement, a surgeon at Avignon, by Paul, in his "Supplement aux Institutions Chirurgicales d'Heister," and experiments by Boin, of Dijon, published in 1769, which prove, with observations of his own, that the formation of the new tendinous substance is due to the surrounding cellular tissues, from which material is effused into the canal which the separated ends of the tendon had occupied, so as at last to obliterate it, after which it is gradually converted into a solid tendon of fibrous substance.' "

The Academy of Sciences of France, accorded in 1837 to M. Bouvier, the second surgical prize, (6,000 francs,) principally for his researches on the effects of the division of the tendo achillis for the cure of club-foot.

The surgeon who appears to have performed the operation we are now considering the greatest number of times, is M. Duval. In a memoir, presented by him to the Royal Academy of Sciences of France on the 26th June, 1837, he reports sixty cases of club-foot cured, between the 28th October, 1835, and the 1st June, 1837, by means of division of the tendon. The oldest of the subjects was sixty-one years, the youngest ten months.* His particular mode of operating is not given in any of our Journals, and we must wait for these details until the committee of the Institute to which the memoir was referred shall report, or the memoir itself be published.

M. Duval has also treated false articulation of the knee by division of tendons. At the meeting of the Royal Academy of Sciences on the 21st November last, he communicated to it three cases successfully treated by him.†

"The subject of the first case was a child of six years old, in whom, for the last three years and a half, the leg had been drawn up so forcibly that the heel actually was in contact with the buttock. The foot, on the same side, was also deformed, and presented an example of the pes equinus. The articulation of the knee admitted of some obscure movements, and the condyles of the femur seemed to be considerably tumefied; the tendons of the biceps, semi-membranosus, and semitendinosus muscles, appeared as strong prominent chords running along the side of the joint.

"The deformity had been the consequence of a long-continued paralytic affection of the lower extremities. M. Duval commenced the treatment by dividing the tendo achillis, and succeeding in restoring the natural position of the foot in fifteen days. He then proceeded to divide the three tendinous bands above-mentioned, by introducing a small bistoury beneath the skin, and cutting outwards; this immediately restored a great portion of movement to the joint. Some simple machinery was then applied to the back of the leg, so as to keep up constant extension, and after a lapse of twenty days the limb was restored to its natural position; the patient could now stand upright on both legs, and even walk a little without crutches. In two months the cure was nearly completed, the boy's leg was perfectly straight, and although emaciated and weak, was daily gaining in bulk and strength.

"The subject of the second case was a child eleven years of age. The angular

* Gaz. Méd. de Paris, 1st July, 1837, p. 411.

† Gaz. Méd. de Paris, 25th November, 1837, p. 767.

anchylosis of the knee had existed for six years, having been originally produced by a rheumatic affection of the joint. The articulation was moveable, but covered with cicatrices. The operation, which in every respect was similar to the former one, was attended with complete success. The third case, which presents nothing remarkable, also terminated successfully."

The merit of being the first to perform the operation in this country is, we believe, justly due to our correspondent. In the three cases in which he has operated, the deformity was of the species termed *varus;* and as is shown in the casts of the feet, taken before the operation, with which Dr. Detmold has favoured us, was very considerable. A cast of the foot of the first case, taken five months after the operation, shows the relief to have been complete. From the early period at which the cast was taken, there is still some swelling left, and some remains of the callus on the side of the foot, but in time these will no doubt disappear.

We shall be happy to exhibit these casts to any of our professional brethren.

Art. VIII. *Case of Perforation of the Appendicula Vermiformis—Death from Peritonitis.* By Edward Hallowell, M. D.

Elizabeth Lusk, ætat nine years, the subject of the following observation, was a domestic in the family of Isaac C——, a respectable friend in this city. It was stated by several members of the family with whom she had lived about six months, that her general appearance was rather delicate, and that she seemed to be more feeble upon the right than the left side. She had a slight cough, but so slight as scarcely to attract notice. Her disposition was remarkably cheerful, and her intelligence unusual for a child of her years. About five weeks ago she had a chill, succeeded by slight fever and headache, but she was not confined to her bed more than a day or two. It was observed, however, that notwithstanding she went about the house, and performed her duties as usual, her sleep at night was disturbed; but she was not heard to complain of pain until about a week before her death; the pain, at this time, was confined chiefly to the right iliac region, but was occasionally felt in the right and left hypochondria, and about the umbilicus. She was directed by her mistress to take two compound cathartic pills,* and to have a mustard cataplasm applied to the part principally affected. The pills purged her very freely. Her case was now stated, by her own request, to a homœo-

* These pills are composed of colocynth, jalap, calomel, and gamboge.

pathic doctor, in the neighbourhood, who had prescribed for her on a former occasion. He did not call to see her, but sent her five powders, four of which were administered. The irritation of the bowels continued, accompanied with frequent disposition to go to stool. She afterwards took a dose of castor oil and laudanum. The family physician, Doctor Warrington, was not sent for until the evening of the day previous to that on which she died; her symptoms then were as follows: Pulse 120, and quite feeble; great pain in the right iliac fossa. On examining this region, a distinct tumour could be felt, extending obliquely upwards towards the umbilicus; pressure upon the tumour was attended with exquisite pain; there was also a diffused pain over the abdomen, but the tenderness was not very considerable. The bowels were somewhat distended; intelligence perfect. She had vomited twice in the afternoon, the matter discharged having a greenish appearance, resembling bile. Dr. Warrington directed a blister to be applied over the tumour, and five drops of the ol. terebinth to be given every two hours, with a view of removing the flatus with which the bowels appeared to be distended. The vomiting continued during the night, attended with violent retching, the matter vomited having a dark colour, somewhat resembling tobacco-juice in appearance, with thin flakes of a jet black colour floating in it. About eleven o'clock at night she complained of acute pain throughout the abdomen, the pain being so great as to cause her to scream out; her screams might be heard over the house. These symptoms continued, with slight remissions, until the next morning at seven o'clock, when she died, her intelligence remaining perfect until the last.

Autopsy.—February 4. *Nine hours after death.*—Present, Doctors Warrington, Peace, Boyer, Pepper and Hallowell.

Exterior.—Body somewhat emaciated; slight rigidity of limbs; no œdema; skin pale throughout; abdomen slightly distended; no well-defined tumour perceptible; but on pressing rather firmly on the right iliac fossa, a gurgling noise was produced, and a doughy feel communicated to the fingers, exciting a suspicion of disease about the caput coli.

Thorax.—Middle lobe of right lung tuberculous; tissue firm, of a greyish-red or ash colour, filled with numerous tubercles of a light-yellow colour and caseous consistence; upper and lower lobes slightly engorged, but crepitant, without trace of tubercles; left lung also slightly engorged, but perfectly crepitant, containing no tubercles in any part; pleuræ pale and moist, containing no serosity; heart of normal dimensions; pericardium healthy.

Abdomen.—Effusion of a pint and a half of fluid of a light-yellow

colour, of the consistence of milk, containing a considerable quantity of very minute shreds of coagulable lymph. This occupied, more or less, the cavity of the abdomen; peritoneum lining the abdominal muscles and diaphragm, of a dark-red colour, minute vessels ramifying in an arborescent form over its entire surface; peritoneal covering of intestines of a bright red or scarlet colour, the redness less diffused than upon that portion reflected over the abdominal muscles, the arborizations being more isolated and distinct.

On examining the contents of the right iliac fossa, the caput coli was seen to adhere firmly to the posterior wall of the bladder, to the peritoneum lining the iliacus internus muscle, and to the rectum, the whole being matted together and forming the tumour felt through the parietes of the abdomen during life. On squeezing the tumour, a fluid was seen to exude from a small opening in its centre, precisely the same in appearance with that contained in the cavity of the abdomen. The parts were now cautiously removed, with a portion of the bladder and the whole of the intestines, which were then carefully examined.

Large Intestine.—Mucous membrane of rectum and left lumbar colon of an obscure yellow or fawn colour; consistence good, strips of an inch in length being easily obtained; mucous membrane of transverse and right lumbar colon of the same colour, but more or less injected throughout; minute aborizations were seen to ramify in spots upon its surface, more distinct upon that portion of the membrane immediately contiguous to the caput coli, and upon the lining membrane of the caput coli itself; mucous cryptæ very distinct; middle and upper portion of rectum covered with a false membrane upon its peritoneal surface, several inches in length, and a line or more in thickness; rest of intestine of a light pink colour until about two inches from the caput coli, where it becomes highly injected; the vessels, forming a fine net work, are seen to ramify in every direction. Caput coli adhering firmly to the posterior wall of the bladder near its fundus, and to the peritoneum lining the right iliac fossa; also to the upper portion of rectum as before mentioned, the whole united together by false membrane, several lines in thickness, and of very firm texture. The appendicula, instead of floating loosely in the cavity of the abdomen, adheres firmly to the caput coli at its anterior and lower surface, little more than an inch of it being free. In the angle formed at its point of union with the caput coli, the parts in the neighbourhood of which are much thickened by false membrane and deposites of tuberculous matter, there existed a small opening about two lines in diameter; the edges of this opening were smooth and rounded, one half adhering firmly to

the mass of false membrane intervening between it and the caput coli. Immediately adjoining the opening, and communicating with it, there was a cyst about an inch and a half in its largest diameter, smooth upon its inner surface, and containing a small quantity of yellow fluid similar to that in the intestine; mesenteric glands in the neighbourhood, enlarged and tuberculous. On examining the remaining portion of the appendicula with care, a small ulcer was observed at about a line and a half from its free extremity. This ulcer was rather more than a line in diameter. It did not penetrate into the cavity of the appendicula, the mucous coat remaining entire. On passing a probe within the cavity, and pushing it forward, its point was distinctly seen through the mucous coat at the point of ulceration. On slitting up the appendicula, a small pellet of fœcal matter, of a light-yellow colour and soft consistence, was noticed; it was about two lines and a half in length, and one in breadth; mucous membrane healthy.

Small Intestine.—Mucous membrane of the same yellow colour as that of large intestine; consistence good; its cavity filled with a fluid precisely of the same appearance with that found in the abdomen, except that it appeared to be of a rather more fluid consistence; muciparous glands, and glandulæ aggregatæ, more than usually developed, but otherwise healthy. The *mesenteric* glands were generally enlarged, some of them the size of a pigeon's egg, and tuberculous; tissue firm.

Bladder distended;* mucous membrane healthy. *Kidneys* presented nothing worthy of notice. *Spleen* of usual dimensions, of a dark slate colour. *Liver* of a slaty colour upon its lower or concave surface, brownish above; tissue firm; gall bladder distended with bile of a light green colour.

Head.—Veins of the pia mater distended; no serosity in cavity of the arachnoid or cellular tissue beneath; substance of cerebrum firm; substance of cerebellum somewhat softened, the softening appearing to be general. This part of the examination was made rather hastily, in consequence of the lateness of the hour.

Spinal marrow not examined.

Remarks.—It is to be regretted that no opportunity was afforded of inquiring minutely into the history of this interesting case during the life-time of the patient. The local peritonitis was no doubt of long standing, probably several months; yet it is rather remarkable that such an amount of mischief should have existed without giving rise to pain, or other prominent symptoms. We find, however, an analogous state of things existing in chronic pleurisy, the rational signs of which

* She had difficulty in voiding her urine a day or two previous to her death but not before; at least her mistress was not aware of it if she had.

during life, are sometimes very obscure. Its exciting cause is somewhat doubtful; the probability, however, is, that in consequence of a deposite of tuberculous matter, and its subsequent softening, ulceration of the coats of the appendicula was induced; the opening being minute, and the contents of the appendicula at the time, small in quantity, the inflammation, excited by their exit, was not sufficient to give rise to symptoms of an acute character. It was not until by the action of drastic medicines, the secretions from the mucous cryptæ of the intestine were greatly augmented, and the subsequent violent efforts at vomiting, that the liquid contents of the bowels found their way into the cavity of the peritoneum, giving rise to the acute symptoms we have detailed, and causing death in a few hours.

Art. IX. *Case of Malformation of the Heart.* By Wilmer Worthington, M. D., of West Chester, Pa.

The subject of the present remarks, was a female child, which had been liable from birth, to almost daily attacks of oppressed breathing, attended with blueness of the skin and nails. It was evident from the symptoms, that the venous and arterial blood mingled in such a way, as to be thrown over the system in a mixed state. It had been under the care of my friend Dr. J. Thomas, and occasionally, through his kindness, I had witnessed its sufferings. We entertained no doubt, that malformation of the heart existed, and it was confidently believed, that the foramen ovale remained open. Some time previous to its death, which occurred when about 22 months old, it began to emaciate; had occasional cough and diarrhœa. Its blueness, and other symptoms, continued during the whole period of its life; and such was the distress and embarrassment which accompanied the respiratory and circulatory functions, that it was necessary to keep the child almost constantly under the influence of anodynes. Digitalis was also administered with a view to retard the action of the heart. The peculiar symptoms were most liable to recur, whenever the child was agitated, or became fretful.

Dr. Thomas being absent from the neighbourhood at the time of its death, Dr. P. S. Conner and myself obtained permission to make a post-mortem examination. This being done, the following peculiarities were noticed.

The heart was divided into the four usual cavities—two ventricles and two auricles. The right auricle was very small, and exhibited

no appearance of musculi pectinati. The pulmonary veins emptied into this cavity, and the auricle seemed to be merely a dilatation of these vessels. There was no opening between this part of the heart and the right ventricle. The foramen ovale remained open, so that the blood from the lungs passed directly through this opening into the left auricle. The venæ cavæ emptied their contents into the left auricle. This cavity was larger than natural, and presented the usual appearance of musculi pectinati commonly found in the right auricle. These two cavities, both in structure and office, seemed to be merely transposed. The ostium venosum existed in the left side of the heart, with its usual valves. The ventricles were of the ordinary size and thickness. Their interior structure presented the usual appearance. The aorta arose from the right and left ventricle by a spreading mouth, which formed a communication with both those cavities. The septum between the two ventricles immediately under the mouth of the aorta was defective in such a way, as to form an opening between them. The pulmonary artery arose from the left ventricle a short distance from the aorta. No ductus arteriosus existed. This passage in the fœtal state being unnecessary, on account of the aorta and pulmonary artery proceeding from the same cavity. The usual valves at the mouth of the aorta were wanting; which circumstance, no doubt, contributed very materially to increase the embarrassed state of the circulation.

From this peculiar formation of the heart, it is very evident, that the circulation must have been conducted in the following manner. The blood as it returned from the general system was received by the venæ cavæ and carried into the left auricle; where it met the blood returning from the lungs through the pulmonary veins, right auricle, and foramen ovale. The arterial and venous blood here mingled, and in this state, passed directly into the left ventricle through the ostium venosum. By means of the opening in the septum between the ventricles, at the mouth of the aorta, the blood had access to the right ventricle; and from the two ventricles it was thrown into the aorta, and at the same time, into the pulmonary artery, and returned again through their proper vessels to meet in the left auricle.

Cases of malformation of the heart are by no means uncommon, as we have many recorded of this character; but, I am not aware of having seen any description, which exactly accords with the present; and therefore I have ventured to communicate it for your excellent journal. It very satisfactorily accounts for the symptoms under which the child laboured, and leaves no room for surprise at the embarrassed state of the circulatory system especially, which existed from birth.

REVIEWS.

Art. X. *The Philadelphia Practice of Midwifery.* By Charles D. Meigs, M. D., Lecturer on Midwifery and the Diseases of Women and Children; Member of the American Philosophical Society; and of the Philadelphia Medical Society. With numerous engravings. Philadelphia: James Kay, Jun. & Brother. Pittsburgh: John I. Kay & Co. 1838. Royal 12mo., pp. 370.

The name of the author of this work is a sufficient guaranty for its excellence. Dr. Meigs is extensively known as the author of various essays and reports; as one of the conductors of the North American Medical and Surgical Journal; and more recently, as the able translator of Velpeau. Accordingly we find throughout the present work, the evidences of a practiced hand. Of the principles it promulgates, and the practice which it recommends, we shall have occasion to speak when we come to examine the various subjects of which it treats. Before doing this, we must make a passing remark in relation to the *title* of the book.

Writers, imitating the living examples around them, generally exercise the right of bestowing on their bantlings whatever name fancy dictates, from the quaintest cognomens of the most ancient history, down to the oddest inventions of modern romance. Therefore to cavil with a *name,* whether applied to man or the creations of his mind, seems like flying in the face of authority, and trenching indeed upon the forbidden ground of taste. Still, there is a fitness in things, and we think propriety dictates that the title page of a book, on science at least, should in some degree characterize its contents.

Now we are not about to say that, in the present instance, the work does not inculcate the practice generally pursued in Philadelphia. On the contrary, we believe that, in the main, it will have the approval of all the experienced obstetricians in the city. Nevertheless, the few instances in which direct reference is made to individual opinions and practice, afford latitude for those who are less acquainted than ourselves with the ample opportunities which the personal and professional popularity of the author allow him for collecting the views of his brethren, to suppose that the title is selected more for the gratification of fancy than the expression of a fact. The inference, indeed, is the more natural, from a remark in the dedication, that "it (the book) is rather an expression of his own reflections and experience, than a dry compilation," &c. However, he has high example for his course: and, what is better, the practice which the book recommends, if not

derived from his fellow-townsmen, is at least such as they might willingly avow.

Following the example of obstetrical writers generally, Dr. Meigs commences his work with a description of the female parts concerned in generation and delivery, their relations and functions, and the form and dimensions of the fœtal cranium. In a systematic work, this course is necessary to render it complete, and to avoid the trouble of frequently referring to works on anatomy. But to those who are already familiar with these subjects, it is the part least read, because it promises little of novelty, either in facts or in argument. Of the nineteen chapters into which the present work is divided, four are devoted to the subjects to which we have referred. The author has contrived, however, to render their perusal less than usually dry, not merely by the freshness of his descriptions, but by connecting the structure of parts with their functions, and an account of the occasional lesions of both.

On this, which we may call the introductory part, we are but little disposed to dwell. One or two matters we shall notice, because of their practical bearing, before proceeding to the consideration of those more strictly obstetrical in their character. The following observations on the muscular structure of the uterus, we think are deserving of this attention.

"Various attempts have been made to demonstrate the muscular fibres of the womb, and they have been divided into layers and planes and fasciculi, for that purpose; but the very fact of such difference of opinion is proof enough that the arrangement of them is not yet clearly known. If it were known and demonstrable, there would no longer exist any dissidence concerning it, since whatever is clearly demonstrable ceases to be a subject of dispute or doubt."

Now, the assumption that, because there is a difference of opinion on any subject, it is therefore not understood by any of those who hold opinions in relation to it, is any thing but logical. The author's own daily observation must afford him examples to the contrary. Mankind, generally, are much more credulous than wise; more inclined to follow generally received opinions than to seek for truth in demonstration. And philosophers too, are not a little prone to form opinions without resorting to that troublesome method, and not unfrequently adhere to them, rather than adopt the inductive conclusions of others.

The arrangement of the muscular fibres of the uterus, it seems to us, has been clearly demonstrated by Madame Boivin—as much so as those of any other organ. Her description is consistent with the analogies furnished by other organs, and with the phenomena which occur both during partial contractions of the uterus and complete parturient action; and, until disproved by the equally pains-taking observations of a capable observer, ought to be received as authority on the subject.

That some of the muscular bands of the womb are capable of being thrown into action, while others are quiescent, is undoubtedly true; and that each fibre is a separate muscle, and capable of being separately excited, may also be admitted; notwithstanding, in a healthy

condition they act only in masses. But the perverted action of a part is not the rule by which to judge of its natural function. Spasm of a muscle, or the uncontrollable action of such as ordinarily obey the will, as in chorea, very falsely represent their natural offices. And so, we apprehend, it is with the muscles of the uterus. Spasm of some, or partial contraction of others, as met with in some cases, afford no proof of a natural antagonization between the muscular fibres of the neck of the organ, and those of the body and fundus. The instances adduced to prove it, only show "*a failure of co-ordination* in their movements, when there ought to be consentaneous action." We make these remarks because we perceive that Dr. Meigs, following the high authority of Baudelocque and our respected colleague, Dr. Dewees, maintains the ground we have ventured to controvert.

Chapter fifth is on menstruation. The phenomena proper to this function have been so carefully observed and are so generally known, that little remains to be added; while speculation has exhausted itself in fruitless efforts to explain those things which probably never can be elucidated. Accordingly we have found in our author no new facts on this subject; and, although the chapter is written with much sprightliness, we have not discovered any attempt at a new hypothesis.

"It is almost universally understood," he remarks, "that the catamenial act is in a great degree related to the reproductive faculty, being designed to renew or restore, or maintain its energy, until the period of existence when it ceases to be required.

"What is the proximate cause of the periodicity, I deem it bootless to inquire; since this, like most other vital processes, has a sort of metaphysical subtlety, which defies all endeavour to grasp or retain it."

He denies that the menses are to be explained on the grounds of general plethora, local plethora, or lunar influence; or that it is a state superinduced upon the constitution by the habits of civilized life. On the contrary, he regards it as an original function of the human female; inasmuch as the oldest records we have, show that it was customary in the earliest periods of time.

The uterine arteries, he thinks, are the source whence it proceeds. Whether it is pure, unaltered blood, or a secretion, he appears unable to decide.

"There is no doubt," he remarks, "that, in the general, no clots or shreds are observable; nevertheless, Madame Boivin, whose knowledge of the whole topic is not inferior, perhaps, to that of any other writer, declares that it is blood like that from a vein.

"The few opportunities I have had of observing the appearances of the catamenial fluid, have been insufficient to enable me to come to positive conclusions: since healthy women admit of no such investigations; and the morbid specimens, which are the only ones submitted to us, are not to be considered as evidence of what occurs naturally. Madame Boivin's account is, therefore, more worthy to be relied upon than that of any physician whatever. Madame B. can speak of the normal, and the medical man can only have access to the observation of the abnormal state or character of the discharge."

All this is very gallant in our author; but while we entertain, as we have already expressed, the highest respect for the opinions of

that accomplished authoress, on all points relating to the female organs and their functions, we cannot agree with him that "the medical man's" opportunities are so limited as he supposes. Neither do we think that the almost solitary opinion of that lady (solitary as regards late writers) should outweigh the high authorities arrayed on the other side—supported, too, by the positive results of chemical analysis.

But we are not disposed at the present time to enter upon the disquisition of this physiological problem: preferring the consideration of those parts of our author's work that have a more immediate relation to practice.

The next chapter we regard as eminently of this character. The subject is amenorrhœa. Instead of contenting himself with a dry detail of the ordinary causes of this affection, its phenomena, and the means of cure, our author embraces the fitting opportunity to inculcate broad and general principles applicable to derangements of the menstrual function. The tenor of his remarks may be inferred from the following observations; the propriety and correctness of which we are sure that our readers will admit.

"Is it not notorious among the profession that the medical treatment of amenorrhœa is eminently empirical, unsatisfactory, and unsuccessful? It must be admitted, that the subject is, in a practical view, a very difficult and embarrassing one; nevertheless, I feel much persuaded, that a more considerate, and a more rational attention devoted to the cases which fall under our notice, would enable us more frequently to administer relief, without being obliged to resort, as we are now, often to every one of the menagoga in succession, and in vain.

"A blister applied to the thorax often cures a pleurisy, upon the principle that 'pars dolens trahit,' or the principle of counter-irritation; it is equally true, that any considerable external or internal fixed irritation may prevent or counteract the natural tendency of the system to produce catamenia. A wet stocking, a draught of cold and damp air, produces in the skin a certain condition which frequently serves to prevent or arrest the menstrual offices; a fortiori, therefore, some latent disorder of an important viscus or organ, would scarcely fail to interrupt, or, in some measure, trouble this delicate depurative act. Hence, instead of opening the great volume of the Materia Medica, and searching under the head of Menagoga for some specific means of removing the difficulty, let the medical man carefully study the state of the patient's health, endeavouring by repeated inquiries to learn the case of the several great functions, and that of minor ones, in order, in their excess or deficiency, to find a cause of the amenorrhœa, which he will then be able to treat with the reasonable methods that a perfect understanding of the case will suggest to him.

"It is not to be supposed that if a woman's constitution can be brought into healthful play in all other regards, she will be vicious or disordered in this instance, of amenorrhœa. I grant, that sudden arrests or stoppages may take place from slight, and perhaps local causes; but I speak now of the instances of rebellious obstructions. I wish to impress the idea that a woman is not unhealthy because she fails to menstruate, but rather, that she fails to menstruate because she is unhealthy." pp. 58–9.

Hence the author, with the best writers, regards amenorrhœa merely as a symptom, or evidence of disease. In this he is undoubtedly right. Therefore it is necessary, in order to ascertain the means of cure, to interrogate the different organs through their functions,

their sympathies and sensibilities, to enable us to arrive at the actual disease or pathological error; and "after having subdued or mitigated the local disorders, and the constitutional disturbance arising from them, if the sanguine apparatus of the womb still fails to act properly, in yielding the catamenial discharge, the time, he thinks, is arrived for resorting to the emmenagogue articles."

Dr. Meigs admits that we possess no article whose direct influence on the uterus entitles it to any great reliance as an emmenagogue. Aloes and cantharides seem to rank highest in his confidence; and these act but indirectly, through the near sympathy of the uterus with the rectum and bladder.

The succeeding chapter is on dysmenorrhœa, a term "applied to those cases in which the act of menstruation is accompanied with pain in the region of the uterus." Dr. M. regards the disease as depending on a more or less inflammatory condition of the uterus, "causing it to excrete, as in conception, a caducous matter that has been supposed to be similar to the deciduous coat of the gravid womb. The discharge of this decidua is attended with severe pain; rendered greater, probably, by the excessive irritation of the womb, which causes all its contractible efforts to be more acutely painful."

Under this view of the disease, the treatment mainly relied on, consists of rest, general and local blood-letting, and the other means commonly employed in the reduction of inflammatory action.

Leucorrhœa, in the opinion of the author, is a catarrh of the affected part, which may be seated in the cavity of the uterus, the vagina, or the inner surface of the labia. Very properly regarding the discharged fluid as the product of inflammatory action, he recommends bleeding, rest, cooling aperients, mild lotions, and all the means used in the analogous affections of other mucous surfaces. Holding these views, he naturally, and most properly, we think, condemns the empirical treatment by astringent washes and stimulating food and medicines; at least, until, by the use of proper means, or the long continuance of the discharge, the inflammatory condition is, in great measure, overcome.

At this point, the author closes his remarks on the diseases of females which are unconnected with pregnancy or parturition. The various organic affections of the uterus, the ovaria, the vagina, the labia, clitoris, &c., are altogether unnoticed. Doubtless the object was to shorten the book, by confining it to obstetricy. In this we think him wrong. The class of persons for whom the work seems intended, are rarely possessed of large libraries; and they will naturally look to a book on midwifery for information on those diseases which are not ordinarily included in systematic works on the other great departments into which our profession is divided.

The ninth chapter is a very comprehensive one; it occupies more than a sixth of the whole book.

Under the title of pregnancy, the author has included: generation or reproduction, as explained in the hypotheses of the numerous physiologists who have speculated on the subject; conception, and the

formation of the human ovum; the changes and developements of the uterus and its contents, in a regular and natural course; the signs and circumstances peculiar to pregnancy, and the modes of ascertaining them, and all the accidents liable to occur during that state, and the remedial means to be employed.

The speculative parts of this chapter we shall pass over without comment. So much as relates to generation, is written with much cleverness, and presents a succinct view of the hypotheses which have severally amused philosophers for centuries past: added to which, by way of commentary, we have the author's own reflections on the subject; which, truth to say, clothed as they are in the easy eloquence peculiar to the writer, exhibit more of metaphysical speculation than of sound physiological investigation.

In regard to the formation of the placenta, Dr. Meigs adopts the opinion of Velpeau, that it is wholly fœtal; that there is, in fact, no maternal portion. His arguments on this point are advanced with so much confidence, and are so plausible withal, that, although not wholly convinced, our confidence in the Hunterian doctrine is so far weakened, that we are fully prepared for new enquiries on the subject. The remaining portions of this chapter are of a truly practical character. The subjects embraced are of every-day concernment, and are discussed in a masterly manner.

The succeeding chapter on labour, is likewise very interesting, both from the nature of the subject and the manner in which it is treated. The author has very well described the phenomena which characterize true labour, as contradistinguished from those which indicate a less natural state. To students and young practitioners this may be regarded as the most interesting part of the work, inasmuch as it supplies the kind of information required in every-day business, the knowledge of which is so important to the character of the practitioner, and to the welfare of those who entrust themselves to his care. Too often it is passed over as unimportant, because natural labour requiring no interposition on the part of the obstetrician, is therefore thought to require no attention on the part of the teacher. But this is a grievous error. The young obstetrician must make himself familiar with the circumstances and progress of a natural case, in order that he may assure his patient, and be assured himself, that no interference is required. And in cases of a more serious character, it is indispensable for him to be well informed in all these particulars, that he may be able to appreciate the unfavourable circumstances, and correct or control them.

On one point, the distinction between true and false pains, the author does not appear to us to have treated as fully and clearly as would be proper—it is the condition of the os uteri. During what are called *false pains*, the os uteri is always thicker and firmer than in genuine labour. But false pains are of two kinds: such as occur prematurely, where from any cause, as fatigue, intestinal irritation, or the like, the uterus and abdominal muscles are induced to contract before the neck of the uterus is fully obliterated. In such cases, the

touch discovers that instead of a thin, soft, membranous os uteri, yielding to the expulsive effort, it is either tubulated, or if partially dilated, it presents a well defined ring, which *hardens,* and sometimes contracts instead of yielding, during a pain. The other is when the labour occurs at full term, the os uteri being dilated or quite dilatable, the pains recur frequently, attended with a good deal of suffering; and yet no sensible advancement takes place. In these cases there are *partial* contractions of the uterine fibres; not that full, general, and consentaneous action which is necessary for successful labour. But something, too, is to be inferred from the condition of the perineum and sphincter vaginæ. Where these are contracted, rigid, and the parts unmoistened by secretion, it will rarely happen that delivery will be speedily accomplished.

The eleventh chapter is on the "*conduct of a labour,*" and is well worth the whole cost of the book. It is replete with good sense and sound instruction. Chapters XII., XIII. and XIV., are on the different presentations of the fœtus, the mechanism, progress, &c. of such cases. These are all well written articles, and contain much sound instruction.

The fifteenth chapter embraces the consideration of "preternatural labour." This portion of the work, which necessarily details the resources of our art under the various difficulties and complications that occur in obstetricy, will properly interest every one. To pretend, however, to give an analysis of it, would be alike unjust to the author and the reader. It admits of no condensation without the omission of material facts, or important rules.

The remarks on the use of the tampon, or plug, in cases of labour attended with hemorrhage, we deem very important. The use of this means, in all uterine hemorrhages, is by far too common. But the frequency and extent to which it is resorted to, in floodings which happen during, and immediately subsequent to, labours in the latter months, demands, on all hands, the most emphatic condemnation.

"There is," remarks our author, "in general, under these circumstances, a strong disposition to make use of mechanical means of stopping the hemorrhage, such as the application of napkins to the vulva, strongly compressing the orifice; and also, the plug or tampon, which, filling the vagina, is supposed to favour the coagulation of the blood. But, if it be remembered that the bleeding orifices are near the fundus uteri, and that the extravasated fluid trickles down betwixt the chorion and the womb, from the fundus to the orifice, I think it will be seen that such mechanical means can scarcely exert any other than injurious effects in the case. They may enable us to conceal the fact, both from the patient and from ourselves, that the vital fluid is escaping in a dangerous abundance; but common sense ought to show us, that while we may prevent the fluid from falling out of the orifice of the vagina, by plugging that orifice with sponge or other materials, we do not prevent it from flowing back upon the outer surface of the ovum and the placenta, both of which it detaches more and more completely from the womb, leaving the woman exposed to greater hazard than she would incur were we to permit the blood to escape as fast as it is effused. Such methods, assuredly, will not favour the arrest of the effusion, by coagulation, the source of the flow being too distant from the remedy. It is, in general, better, in uterine hemorrhage, to let all the blood

that escapes from the vessels, also escape from the vagina. When the uterine superficies is diminished, the bleeding is stayed. The application of cloths, wrung out of iced vinegar and water, to the hypogastrium, is of greater avail, and far more safe than the tampon. I would gladly urge upon the student the necessity of the greatest caution in the employment of so dangerous an agent as the tampon, except in the early stages of gestation, or where the capacity of the womb is not sufficiently great to admit of its containing a great quantity of blood. No hemorrhage is so dangerous as the concealed hemorrhage."

We would even go farther than Dr. Meigs, and say that in the very cases he has excepted, the tampon is not only useless, but injurious. It is useless from its incompetency to arrest the flooding in the slightest degree; and it is injurious by the irritation it causes to the vaginal surface, and by retaining fluids which very quickly become offensive, beside the terrible evil of concealing danger instead of removing it. In every point of view, it is better that the blood should be allowed to escape as fast as it becomes extravasated.

For several years past we have discarded the tampon in the treatment of uterine hemorrhage of every description, and thus far have seen no cause to change either our opinion or our practice in this respect.

Various other complicating circumstances are discussed with much brevity, under the general title of this chapter—as placenta prævia, convulsions, syncope, hernia, &c.; but we have not discovered any thing said of them sufficiently novel to require particular notice.

Chapter XVI. is devoted to the consideration of operative or instrumental midwifery. It contains a very interesting account of a female in this city, whose pelvis is exceedingly contracted, from whom two children were removed at term by Dr. M., in successive pregnancies, by the use of the crotchet; and who has been twice delivered since of living children, by undergoing gastrotomy, and is now in the enjoyment of good health.*

Dr. Meigs prefers the forceps contrived by Dr. Davis of London. He thinks it decidedly better than the French forceps, the English straight instrument, or any other with which he is acquainted. Siebold's instrument he objects to particularly, as being unnecessarily heavy, clumsy, and the clams too much curved. Whatever force there may be in these objections, we think he is in error in saying it is the instrument "preferred and often used in our city by Dr. R. M. Huston." Dr. Moehring, of this city, who was a pupil of the German professor, has shown us a pair of Siebold's forceps made in Germany by the professor's own cutler, and it certainly differs in several material points from the one employed by Dr. Huston. The instrument exhibited by him two or three years since, at a meeting of the College of Physicians, and subsequently before the Philadelphia Medical Society, and which is the one he constantly uses in practice, is longer, lighter, more curved, and wider in the fenestra than that of Siebold.

Under the head of "Atresia," a very interesting case is given of a

* This case is fully detailed by Dr. Fox in the first article of the present number.

lady whose vagina had sloughed away, subsequent to parturition. The uterus continued to secrete the menses, which, for want of an outlet, so accumulated in its cavity as to cause much distress. Dr. Randolph succeeded with the scalpel in making an artificial passage in the proper situation of the vagina, which was kept open by the constant use of a metallic bougie, until it became thoroughly lined with a delicate membrane. This, however, although about three inches deep, was not made to communicate with the womb, in consequence of the surgeon being unable to find the os uteri. After a lapse of three months, the fluid contained in the womb having failed to find an outlet in the proper direction, Dr. Meigs punctured the uterus through the rectum with a trocar, when twenty-five ounces of thick meconium-like matter was discharged.

Five months after this operation, about the same quantity was discharged, spontaneously, by the vagina: affording a reasonable hope that she will be relieved from further difficulty.

In morbus cœruleus of infants, Dr. M. advises that the child be placed on its right side, the body inclined at an angle of 30 degrees; that by maintaining the heart in such an attitude, the left auricle may be perpendicularly above the right one, in order that the effect of gravity on the blood may cause it to flow off into the ventricle, instead of passing through the foramen ovale.

He alleges that by this means he has succeeded well in several very threatening cases. But we have very little confidence, we confess, in the success of this, or indeed, any other treatment, where there is much organic defect; though we willingly admit the propriety and advantage of entire rest and tranquillity, and the avoidance of whatever may tend to increase the heart's action. The blood, when within the cavities of the heart, is subjected to forces so much more powerful than gravity, that we conceive the latter can exert little appreciable influence over it.

Excepting puerperal fever, our author has omitted all the diseases which most frequently occur during the puerperal state. This is deeply to be regretted, inasmuch as some of them are exceedingly severe, and not unfrequently terminate unfavourably.

Notwithstanding these omissions, however, it appears to us that Dr. Meigs has produced a work which cannot fail to be generally read and approved by the profession. The student will find it valuable as a text book; while to the young practitioner it will prove a convenient work for reference on most of the important points that occur in obstetricy.

R. M. H.

Art. XI. *The Human Brain—its configuration, structure, developement, and physiology; illustrated by references to the nervous system in the lower orders of animals.* By Samuel Solly, Lecturer on Anatomy and Physiology in St. Thomas's Hospital, &c. With twelve plates. 12mo., pp. 492. London: Longman, Rees, Orme, Brown, Green, and Longman. 1836.

The laborious investigations, and the important discoveries, of Gall and Spurzheim, in the anatomy and physiology of the nervous system, created a new era in this interesting department of science. The methods of studying the brain generally pursued before their time, were so radically defective, that all the information acquired, amounted to

> "Little more than a vain catalogue of diseases applied to parts, without reference to their structure, their functions, or even their analogies, in the nervous system of the lower orders of animals."

Such a faulty mode of investigation could not be expected to lead to any very useful results; and we accordingly find, that the field was thereby rendered so barren, and void of attractions, that while lecturers were obliged to submit to the drudgery of burdening their memories with a formidable catalogue of hard-sounding and unmeaning terms, students either retired from it in despair, or toiled reluctantly through its difficulties, without acquiring any useful information.

The improvements which have been made in cerebral anatomy within the last thirty years, have contributed much to lead to a more rational method of studying the central parts of the nervous system; and although there are still many who adhere to the old plan of dissecting the brain by *slices*, the best informed anatomists so direct their investigations, as to unravel the intricate texture of the organ, and expose the relations and connexions between its different parts. The nerves, too, thanks to the labours of Bell, Bellingeri, Mueller, Arnold, and others, have been investigated with a true spirit of philosophy; and the numerous discoveries which have been made in this department, have added invaluable contributions to physiological science. The field, however, is not yet exhausted. Many difficulties in the anatomy and physiology of the nervous system still remain to be solved; and even the discoveries that have been made, are spread over so much space, that for want of proper co-ordination, they are not accessible, except by the few, and are almost entirely beyond the reach of the medical student. For this class of readers especially Mr. Solly has rendered an essential aid, by collecting and condensing into a small compass, and in something of a regular form, some of the leading and prominent facts of cerebral anatomy and physiology, as they have been developed by the labours of modern times. Those too, who are about to embark in such studies, will find great advantage from the adoption of the course he has recommended, viz:

> "By commencing with the structure and functions of the nervous system in the lowest and simplest forms of animal existence; and from this, rising by

degrees to the highest, carefully observing each addition of parts, and the relationship borne by those to an addition of function."

By pursuing this course, he will find that the complicated human brain has its type, in the lower animals, under a form of extreme simplicity, and that its fundamental parts only acquire an intricacy of arrangement in proportion as he traces them through the series, from the lowest to the highest orders; the complexity which he encounters in the latter, being a necessary consequence of the concentration of many parts into a small compass; an arrangement which is indispensable in the more perfect animals, to fit them for the performance of those important functions, so essential to their mode of existence. Commencing, therefore, with the simple, which is easily intelligible, he passes, step by step, to the more intricate and difficult part of the analysis; acquiring, nevertheless, at each stage of the investigation, a key, by which he will be able to solve all the new difficulties that may arise in his progress.

In pursuance of this course, Mr. Solly commences with the consideration of the arrangement of the nervous system in the lower orders of animals, which he traces from the ascaris, through the cyclo-neurose, (radiata,) diplo-neurose, (articulata,) cyclo-gangliated, (mollusca,) and the spino-vertebratæ, (vertebrata,) subdivisions of the animal kingdom; stating, that in a group of animals still lower in the scale, "corresponding to the *Acrita* of Mac Leay," the neurine, (nervous matter,) if it exist at all, is incorporated with the other tissues, and cannot be demonstrated as forming a separate system. This assertion is in accordance with the generally received opinion; yet, if the discoveries recently announced by Ehrenberg should be confirmed, viz: that even in the infusory animals, there is a proper nervous system, little doubt will remain of the presence of such a system in the Acrita. At any rate, Mr. Solly has expressed himself too sweepingly, when he asserts that the *polypiferous* tribes of animals are without nervous system; although so far as our present knowledge extends, this must be admitted to be true of most of the species.

It would be impossible within the limits of a mere review, to follow the author through the exposition he has given of the arrangement of the nervous system of the different classes of animals. In this he has followed, for the most part, the best modern authors, and has contented himself with giving a mere outline of their views. Commencing with the ascaris lumbricoides, because its nervous system is most simple, he quotes Jules Cloquet's description of two white cords, rather thicker in the middle of the body than at the extremities, composed of a series of small lines united at angles, or, as it were, broken, and slightly swollen at each angle, sending to the right and left filaments so thin, that they escape the eye, except when seen through a magnifying lens. In reference to this, he remarks, that to him it appears probable those cords do not represent a perfect type of a nervous system, even in its most simple form; but that in this individual it has been arrested in its developement, at a period corresponding to one of the regular stages through which the nervous system passes in

the higher orders, in whom we know that the nerves are developed first, and the centres or ganglia afterwards; and in this animal, where the ganglia scarcely exist, is it not possible that the organization is incomplete; that the conducting portions of the nervous apparatus has been formed, but not the point from which the power emanates requiring to be conducted?

We cannot easily conceive how Mr. Solly could be led to adopt such an inference, except it be, that he did not carefully examine the description of Cloquet, a very essential part of which he has entirely omitted. This author says, p. 23, chez quelques individus, j'ai constaté qu'elles fomaient autour de la bouche un veritable cercle anastomotique—and again, p. 24, la disposition de ces cordons longitudinaux, les *renflements* successifs qu'ils éprouvent, les filaments déliés qu'ils donnent de part et d'autre, leur reunion autour de la bouche, &c., peuvent les faire considerer comme des nerfs munis de renflements ou de ganglions—all of which corresponds with the description previously given by Cuvier in the Leçons d'Anat. Comp. tome iv. 358. Now this seems to us to correspond very accurately with the type of the nervous apparatus in the diplo-neurose animals, and we see no necessity whatever for adopting Mr. Solly's supposition.

The Asterias are very properly taken by Mr. Solly as furnishing the type of the nervous system or the cyclo-neurose division. The nervous apparatus of this animal, first accurately described by Tiedemann, consists of a ring surrounding the œsophagus, giving off a filament to each ray, besides ten smaller ones, which he believes to descend to the stomach. The latter our author thinks are the nerves of sensation, while the former, which are distributed to the arms, are nerves of motion, page 33. Comparing this simple type with the more complicated arrangement observed in the higher classes, he thinks the nervous apparatus in the whole series may be reduced to three parts:—ganglia, commissures, and nerves.

"The small swellings or nodules of neurine on the *ganglia.*

"The cords which pass between the different ganglia, and thus connect them together, are the *commissures*, or apparatuses of union.

"The cords, which are connected to the ganglia by one extremity, and the textures of the different organs by the other, are the *nerves.*"

In the remaining observations on the nervous system of the cyclo-neurose, as well as in those on the nervous apparatus of the cyclo-gangliated animals, Mr. Solly has relied chiefly upon the labours of Newport and Owen, and as his descriptions contain nothing new, we shall not follow him through the subject. A similar excuse must serve us, for passing over his remarks on the nervous system of the several divisions of the vertebrate animals.

Having disposed of the comparative anatomy in the first part of the work, Mr. Solly takes up, in the second, the consideration of the human brain; commencing first with the membranes, and then proceeding to the description of the configuration of the organ, the surface of which, he says, should be divided into two portions:—the external, or *convoluted*, and the internal, or *figurate.* We observe

nothing under these heads worthy of comment; nor does the author's description of the texture of the brain deserve particular notice, except to correct an error which he has committed, in referring to Dr. M'Cartney, for the first description of the delicate membrane which incrusts the neurine, and, consequently, makes up part of the substance of the brain.

In the part of his work devoted to the description of the spinal cord, Mr. Solly follows the majority of the best anatomists of the present day, in considering it composed of four strands or bundles; two on each side, those in front being separated by a median fissure, but united by a commissure. They are called by him antero-lateral; while those behind, also separated by a fissure, are denominated posterior. The cord is composed, externally, of medullary fibres, and in the centre, of grey neurine. The most superficial fibres of the cord, he thinks, gives rise to the upper nerves, while those which are deeper seated, give origin to those nerves which arise lower down. He adverts to the opinion of Bellingeri, who described the cord as consisting of six strands instead of four, the anterior of which he considered as conductors of volition; the middle, the source of the nerves of respiration, as the par vagum, the spinal accessary, the phrenic, and the intercostals; the posterior, the regulators of the voluntary motions of extension,—flexion being controlled by the anterior. The middle strand of Bellingeri, therefore, corresponds with the respiratory tract of Sir Charles Bell; and it will be seen, besides, that there is a conformity of views between these two physiologists, as regards the office performed by the nerves arising from this middle portion of the cord. We fully agree with Mr. Solly in the *opinion* he has expressed relative to this respiratory tract of Sir Charles Bell, viz: that the evidence of the existence of this respiratory tract is not strong enough to warrant us in admitting it as an established fact. It has never been demonstrated, and even should it be, we are of opinion that there are facts predicated upon the origin of the nerves called respiratory, which could not be reconciled with Sir Charles Bell's hypothesis. We also concur in the opinion which Mr. Solly has adopted, in common with many modern physiologists, that the spinal cord is not a conductor of sensations and volitions, but a centre whence certain powers emanate, like the brain itself, though we may not yet have ascertained truly in what that power consists. The opinions recently promulgated by Marshall Hall on this subject, and to which Mr. Solly alludes, deserve an attentive consideration; and although, in our humble opinion, they do not possess that novelty which has been attached to them by some, and by their author in particular, we doubt not they will lead to the attainment of more correct views of the physiology of the nervous system, than we have hitherto attained.

A more interesting part of Mr. Solly's book, is that which treats of the medulla oblongata—there being much debatable ground, and many points upon which there is still great difference of sentiment. The following is the author's opinion of this part of the nervous system:

"In addition to the columns for motion and sensation, there are here deposited and embedded to a certain extent in its substance, four ganglia—two on each side. The most anterior of these are the ovoid bodies, which derive the name *olivary* from their form. We have already observed their analogies in moths giving origin to the par vagum; in the fish to the branchio-gastric nerves; in like manner, in man, they seem to me to be the appropriate ganglia of the pneumogastric nerves. The posterior ganglia are formed in the fissure at the back part of the cord, which is known by the absurd name of fourth ventricle. They form two projections of a pyramidal figure, and are usually designated the *posterior pyramidal bodies.* In these bodies terminate the auditory or eighth pair of nerves. These also we have remarked in the fish, under the title of tubercles of the fourth ventricle."

The corpus olivare, Mr. Solly thinks, is an important organ in the function of respiration, for the reason that the pneumogastric, which both terminates and originates in it like the spinal nerves, is a compound nerve;—a nerve of sensation in relation to the sensibility of the lining membrane of the respiratory organs, ("the *besoin de respite*"); also a nerve of motion, inasmuch as the muscles of the larynx and the muscular tissue of the trachea, bronchia, and stomach, are under its control. He adduced some experiments confirmatory of these physiological views; but while we admit the correctness of the exposition of the relations of the nerve, we are not disposed to subscribe to the accuracy of the statement made in regard to its exclusive connexion, at its origin, with the corpus olivare. We are rather inclined to consider the pneumogastric as a compound nerve in another sense, viz: having anterior and posterior roots—the former arising from the fissure behind the olivary body—the latter, very indistinct from the floor of the fourth ventricle, as described by Sœmmering, I. F. Meckel, and Bischoff. We shall not stop, however, to discuss this point, but proceed to consider Mr. Solly's views relative to the distribution of the parts composing the medulla oblongata.

"*The anterior columns or motory tracts*" are described as consisting of three sets of fibres, "one, and the most anterior of which passes through the pons varolii, and may be designated the *cerebral* fibres of the anterior columns; a second set, which may be entitled the *superficial cerebilear* fibres of the anterior columns, passing over the surface of the medulla oblongata, are usually seen without dissections."—"The third, or deep cerebilear fibres of the anterior columns, proceeding in company with those of the posterior columns, from about a fourth part of the whole diameter of the restiform bodies."—"Of the fibres which run from the antero-lateral columns, to the cerebellum, there are evidently two sets—one superficial, and one deep. The superficial may again be divided into two sets: the first cross the surface of the cord immediately below the corpus olivare, and may generally be seen without dissection." "The second of the superficial set of fibres, take the same direction; only, instead of crossing the cord immediately below the corpus olivare, they run to the inner side of the corpus olivare, and then ascending to the cerebellum, they form the outer part of the corpus restiforme.

"The deep set of fibres from the antero-lateral columns to the cerebellum, are the most posterior of the whole mass of fibres composing this portion of the spinal cord. They are separated from the posterior columns by the posterior fissure, from which the posterior roots of the spinal nerves emerge; this fissure they cross in their passage to the cerebellum, obliterating it entirely."

The connexion of these fibres of the antero-lateral columns of the medulla oblongata, with the cerebellum, Mr. Solly thinks had escaped the notice of preceding anatomists. He, however, admits, that the superficial order had been previously described, especially by Santorini and Roland, the former of whom called them processsus arciformes. The following quotation from E. H. Weber, will show how far he is correct in this opinion.

"We sometimes find a thin layer of fibres proceeding from the lateral part of the pons varolii, or *from the cerebellum*, which winds around the corpus olivare and the corpus pyramidale, and terminates in the anterior middle sulcus. The surfaces of the two lateral halves of the spinal marrow, therefore, which encounter each other at the anterior middle fissure, exhibits conspicuous fibres, which range *obliquely from before backwards;* they sometimes pursue a curved direction, sweeping round the lower and upper ends of the corpus olivare. Santorini, Malacarne, Gall, and Spurzheim, have called them processus arceformes."*

Besides the fibres of the antero-lateral column, here described, "there is another set, which, in the spinal cord, occupies a completely lateral position, being separated from the posterior columns by the posterior peaks of grey matter. These are regarded by Sir Charles Bell as the *cerebral* strands of *sensation*." They terminate in the cerebrum, and the posterior roots of the spinal nerves are connected with them. At page 225, Mr. Solly remarks, however, that the tract of sensation consists of two portions, the one behind the posterior fissure, and consequently named the posterior column; the other anterior to it, constituting part of the anterior-lateral column. The posterior division ascends to the cerebellum, becoming incorporated in its course with the fibres composing the restiform body. Its fibres are also partly overlapped by, and partly interlace with those fibres from the anterior columns which, ascending to the cerebellum, connect the motor, or voluntary tract of the spinal cord with the cerebellum, as well as with the cerebrum. The anterior portion of the tract of sensation, sends some of its fibres to the cerebellum; the rest of its fibres ascend principally to the outer side of the corpus olivare, and there plunging into the pons varolii, pursue their course to the *thalamus nervi optici.*

The motor portion of the pyramidal bodies passes through the pons varolii, and forms the inferior part of the crus cerebri. It then plunges into the corpus striatum, which is its appropriate ganglion, and its fibres having traversed this body, escape from it, diverging like the rays of a fan, to terminate in the cineritious neurine composing the convoluted surface of the hemispheres.

The fibres composing the restiform body pass directly to the cerebellum—none of them going to the cerebrum.

In some of his opinions we do not exactly agree with Mr. Solly. Besides the fibres composing the processus arciformis, which go to the cerebellum, we should be inclined to follow Riel, Meckel, Langen-

* Hildebrandtz, Handbuch der Anatomie, besorgt von Ernst, Heinrich Weber. Bands III. p. 397. Braunschweig, 1831.

beck, Weber, and others, in saying that the pyramidal body divides into an anterior and a posterior portion, passing in front and behind the corpus olivum, so as to include that body between them. Of these fibres, those which pass in front of the olivary body, continue through the substance of the pons varolii, to form the lower part of the crus cerebri, and afterwards penetrate the corpus striatum. The fibres, on the contrary, which ascend behind the olivary body, form a bundle which can be seen upon the floor of the fourth ventricle. Some of them are distributed to the cerebellum. Others run forward to the quadrigeminal bodies, and along each side of the aqueduct of sylvius, while there are some which can be traced through the pons varolii to the thalamus nervi optici. Rolando supposed that the corpora olivaria correspond to the anterior bundles of the spinal cord. Gall and Spurzheim represent them as ganglia, giving origin to fibres which traverse the pores, and form the upper and inner part of the crura cerebri; while, according to Langenbeck, these fibres are distributed to the quadrigeminal bodies. Mr. Solly doubts the existence of fibres originating in the olivary bodies, and regards the latter merely as ganglia, belonging to the pneumogastric nerve;—an opinion not borne out by facts. We should rather infer that they belong to the pyramidal bodies, with the fibres of which they have the same relation, as ganglia, that the corpus striatum has with the fibres of the crus cerebri, which traverse its substance, or the corpus rhomboideum with the restiform bundle. The fibres of the pyramidal body pass partly through it—partly over its surface, receiving additional fibres in their transit. They are there distributed to the various parts already indicated—not to the cerebrum alone, as supposed by Gall and Spurzheim, but also, in part, to the cerebellum. Indeed, the medulla oblongata is far from being so simple in its structure as has been generally supposed. The elements of sensation and motion of which it is composed, are no longer isolated, as in the spinal cord, but intimately interwoven with each other. Portions of both species of aliments pass both to the cerebrum and cerebellum, and while the several ganglia may be regarded as so many foci, from which certain powers emanate, or towards which certain powers are directed, the distribution of portions of both elements to the two grand divisions of the brain, serves to co-ordinate the several acts performed by the different portions of the organ. In this office of co-ordination, however, the commissures also perform an important part.

Mr. Solly next gives a brief, but, in most respects, an accurate description of the commissures. It presents, however, nothing of sufficient interest to require particular notice. We shall, therefore, pass over this part of his work.

The description of the cerebellum is copied from Mayo's translation of Reil's papers on the configuration and structure of that organ. While we admit its general accuracy—a meed of praise that has been generally conceded to the labours of the celebrated German anatomist, we are by no means disposed to think that Mr. Solly has acted wisely, in incorporating it, with all its unnecessary minuteness of

detail, in a work so elementary as his is on the other parts of cerebral anatomy. Few students will be disposed to burthen their memories with the minute and tedious description of Reil; and if they were even disposed to do so, there are not many who would be able to master the subject, without the aid of previous anatomical knowledge, which they would be obliged to seek elsewhere.

We do not think it necessary to follow Mr. Solly through the description of the cerebral nerves, and the vessels employed in the cerebral circulation. The part devoted to the developement of the nervous system presents more interest, but Mr. Solly might have advantageously spared us the trouble of wading through five pages of natural theology, and Newton's meditations "on the simplicity and harmony of the laws which regulate the universe"—such things add nothing to the value of a work on the anatomy of the brain, and the introduction of them by Mr. Solly, neither indicates good taste, nor a proper regard for the patience of his reader. His description of the developement of the nervous system is compiled chiefly from Tiedmann, and need not detain us. We shall, for the same reason, pass over the part devoted to the physiology of the brain, which is made up almost entirely of a transcript of a report made some years ago to the Royal Academy of Sciences of Paris, on the work of Flourens—with the addition, however, of considerable excerpts from the works of MM. Bouillaud and Foville. Here we think the author has again erred in judgment. He would have done better, if he had made a condensed and faithful digest of the most recent facts and opinions relating to cerebral physiology, collecting all the lights into a focus, and divesting them of all the extraneous matter by which they are obscured.

We regret that we cannot speak in terms of greater commendation of the next part devoted to the consideration of "physiological inferences from pathological states." It is spread over one hundred and forty-seven pages, and, like the parts just mentioned, "is made up," to a very great extent, of cases, which, however valuable they would have been in a treatise on clinics, are entirely out of place in a work on the anatomy and physiology of the brain—designed for the use of students.

We must here close our notice of Mr. Solly's labours. We have found fault with some parts of his work, but we should do injustice both to our own judgment, and to the author, if we did not acknowledge that it possesses a great many merits. It will be found highly useful to students engaged in the study of the subjects of which it treats, and to such, we strongly recommend it. We will merely suggest to Mr. Solly, that should a second edition of his work be called for, which we doubt not, from the favourable manner in which it has been noticed by the British periodicals, will be the case, to recast the whole, and by a more lucid arrangement, together with the omission of all extraneous matter, render it a more suitable manual for the student.

E. G.

BIBLIOGRAPHICAL NOTICES.

Art. XI. *Darstellungen und Ansichten zur Vergleichung der Medicin in Frankreich, England, und Deutschland. Nach einer Reise in diesen Ländern im Jahre* 1835. Von Dr. Adolph Muehry. pp. 283. Hanover: 1836.

Observations on the Comparative State of Medicine in France, England, and Germany, during a Journey into these Countries in the year 1835. By Dr. A. Muehry, Practicing Physician and Surgeon in Hanover. Translated by E. G. Davis, M. D., of Philadelphia. A. Waldie. 1838.

The title of this work does not convey a complete idea of the extent and variety of the subjects treated. It consists, in part, of a series of rather superficial notes on the medical and other scientific institutions in England and France, such as even a general traveller might obtain without much labour; in part of mere statistics, such as lists of hospitals, tables of lectures and professors, &c.; and, in part, of short essays on various subjects, more or less remote from the main design. About two-thirds is really devoted to a comparison of English and French medicine, while a single chapter is given to German science. On the whole, we regard the author's opinions as of more value than his facts. As separated alike from the interests of the English and French schools, he stands in regard to both in an impartial position; and if a truly German dislike of French principles and French practice now and then shows itself, his real candour and love of justice keep it within bounds. A national character manifests itself much more strongly in a tendency to mysticism, to over refinement, and to clothing somewhat common-place thoughts in rather ambitious language. This, however, seems to argue nothing more than a defect of sound taste; an obvious honesty of purpose reigns throughout, and every care appears to have been taken in the examination of the facts, so as to guard against exaggeration or misstatement.

The work is commenced with an account of the two great capitals. Paris, we are told, is all France, and this equally in a medical as in a general sense. Its only rivals for medical reputation have been Strasburg and Montpellier, and the contest has long since been decided against both.

The school of medicine, in Paris, possesses a large building, in which are contained a library, a museum, and a lecture-room, capable of containing 1,500 auditors, and soon to be enlarged. Each professor lectures twice or thrice weekly, and receives therefor an income of 10,000 francs. Beside these, however, there are not less than sixty private lecturers, all of whom receive licenses to this purpose from the government.

The hospitals and hospices (alms-houses) in Paris contain more than 15,000 beds. All are under the management of the "general administration of hospitals," and of a separate office for admission. The mean annual number of patients received from 1819 to 1825, amounted to 47,168.

The manner in which the daily visits to the French hospitals are conducted is well known. The service of the morning finished, the professor delivers a clinical lecture to his pupils, in which the most interesting cases are referred to. But in the "hospital of the school," a building recently erected near the school itself, something of the German system of instruction has been introduced. The students are examined upon the cases at the bedside; and practical instruction is given in the lying-in ward, an advantage which was before wholly wanting

to French medical education, since none but female pupils are admitted to the maternity hospital.

It is justly remarked that the principle of emulation is carried out in France, by means of the *concours*, from the very commencement of education to the close of life. Its operation commences among the children in the primary and secondary schools. At the royal colleges, the students *concour* for honours; and the successful pupils are crowned in the presence of the king. At every stage of medical advancement, a public contest with rival candidates becomes again necessary; and it is only by these successive and successful struggles, that elevation can be attained. The principle is a noble one; and however in its application there may be room for partiality on one hand, or deceit on the other, the general result must be to place the highest merit in the most conspicuous station.

The advantages offered to the foreign students, resident in Paris, have been often mentioned. Not only is no obstacle thrown in the way of their pursuits, but facilities are offered them which are refused to the native citizen. No where is there a freer intercourse established between scientific men of different nations; and no where do such opportunities exist for gaining enlarged views, and divesting the mind of narrowing prejudices. In the winter of 1835, several foreign physicians studying in Paris, united to form a society. It consisted of Italians, English, Americans, Germans, &c. The presiding officer of the society was Ricord, of the Venereal Hospital. The Medical Society of Emulation, which for some years past has been conducted by Louis, numbers individuals of almost all cultivated nations on its list.

In our author's account of London, there is not much beyond what may readily be gathered from obvious sources of information. He remarks that the hospitals are generally rich, being abundantly sustained by English liberality, seconded as this is by the general eagerness to participate in their political regulation. The subscribers, who own the hospital, meet once a month or oftener, dine, and raise a collection. They retain the choice of the medical officers; considering themselves, of course, the most competent judges. In the visits of the physicians, little regard is had to the students. The custom of giving regular clinics upon cases has only recently been introduced by Brodie; and as they are mere lectures without examination of the student himself, their utility is much less than that of the German clinics. The patients in English hospitals are not distributed locally according to their diseases; surgical and medical cases are found side by side. The London medical season lasts seven months; from the first of October to the end of April. During the remainder of the year the hospitals are accessible, and some private courses given; but there are not many students in the city.

The climate of England is pronounced to be favourable to the growth, both of the vegetable and animal race. The men are larger and more muscular than in France; the form of the bony skeleton is fine; the head is of good dimensions; the neck and pelvis narrow; the extremities seldom too long. The mortality in London is not greater than in the country. The English take their food in a more solid and concentrated form than the inhabitants of the continent; their wines are stronger; and malt liquor is in very general use. These influences, superadded to that of the climate, serve to explain many of the national peculiarities, both physical and moral. Even a stranger is not long in realizing their effects. The bowels become constipated, and are moved with more difficulty under the action of cathartics; the influence propagates itself from the digestive organs to the brain and nervous system, depression and gloom take possession of the mind, and the sufferer learns to his cost the true nature of the English "spleen."

One of the striking points of difference between English and French medicine, is found in the views taken in the two countries of the process of inflam-

mation. The English doctrine of inflammation, our author thinks, is peculiarly surgical; that of the French, medical. In the former country, the school of surgery, which owns John Hunter as its founder, have explained and illustrated this process very fully in regard to external parts, while in its connexion with the great cavities, with the mucous and serous tissues of the chest and abdomen, which belong obviously to the domain of medicine, it has been much less regarded. In France, on the contrary, inflammation is recognised as almost always present in internal disease, while its peculiar and obvious phenomena, as presented in the external tissues, are far less studied. In England, there are numerous works, commencing with John Hunter, devoted exclusively to surgical inflammation. In France a single monograph has appeared on the subject, that of Gendrin in 1826, which keeps constantly in view the general tissues of Bichat. Another evidence that French surgery, in its connexion with this subject, is still in arrear of the English, is the preference still shown in France for healing by ulceration, while the advantage of union by first intention is so fully recognised in England.

In regard to Broussais, whose name and labours are so importantly connected with the modern history of French medicine, our author speaks with a candour and moderation, with contrast favourably with the exaggerated praise of his early admirers, and equally so with the tone of disparagement in which it has of late become fashionable to criticize his doctrine. The following remarks occur in this connection:—

"Gastro-enteritis, in its relation to the doctrine of Broussais, demands especial notice. Broussais, who maintains that the whole system can never suffer simultaneously—be universally aroused or depressed—but that local excitement in one part must be accompanied with local debility in another, also thinks, and thus far with Brown, that local stimuli determine this. When by their means excessive excitement occurs in one part, this happens first to those organs which are most abundantly supplied with nerves. This applies especially to the brain, which, however, resists inflammation much more than others, while no part is more susceptible than the digestive apparatus. The lungs are less so, because although well supplied with blood they are less rich in nerves, 'not so thickly strown with these irritable nervous papillæ' which, furnished by the ganglionic system, and by the numerous ramifications of the cerebral nerves, give to the stomach that extreme sensibility which so well fits it for its peculiar functions. It is because the organic sympathy, and that of relation, are so closely united in the alimentary canal, that irritation there is so easily produced, sometimes primarily, and sometimes, if considerable imflammation is developed in another part, the alimentary canal is destined to suffer secondarily. He adduces, as an example, the case where, after lithotomy—and he might have added, after injury of the head and brain, in an individual of good constitution—fever and inflammation follow, and while the irritation extends, congestion takes place in various organs, in none more frequently than that of digestion; and if circumstances, predisposition, and treatment favour such a result, gastritis or peritonitis is developed. Few fever patients will be found in whom pressure on the stomach is not painful. How little encouragement Broussais requires, in order to decide on the presence of inflammation, is hinted above; and according to him, inflammation of the gastric mucous membrane is very apt to extend downward, and thus a gastro-enteritis to be developed. With him dyspepsia is gastritis, vomiting happens from inflammatory swelling and contraction of the pyloric orifice, diarrhœa because the inflammation extends to the ileo-cœcal valve; dysentery is colitis, dysury cystitis, and red tongue and throat indicate the internal fire which blazes up as through the crater of a volcano. Acute cutaneous diseases show themselves in a kind of erythema, and if a certain constitution of the season is present, the character of the disease is still more marked. The victim of measles or scarlatina dies, not of the affection of the skin, but of the accompanying gastritis.

"How far do dissections maintain these doctrines? Dissections have proved much. Few bodies are opened without finding evidence of visceral affection, sufficient at least to have maintained the fever which proved fatal. Andral, an op-

ponent of Broussais, as we shall see below, has given an account of fifty examinations of persons who died of fever. He found, in three fifths, sufficient disease in the intestines to account for death. Of the remaining two-fifths, three were cases of erysipelas of the lower extremities; two, arachnitis; two, croup; one, hepatisation of the lungs; four, diseases of the stomach; and in four the lungs, liver, and spleen, were filled with hydatids. Are we not then justified in adding something to the doctrines of Pinel, Cullen, and Frank, in regard to fever, or in deducting something from them?"

Our author regards Broussais as having introduced into French medicine, changes for which the course of events and the revolution of opinion had already prepared it, and which would have taken place as certainly, though more slowly, without his agency. The prominence which he gave for a time to the pathology of the alimentary canal, and to inflammation, they are again losing; and medical opinion in France is rapidly verging to that point to which the tranquil progress of science would at all events have carried it. The ground was already broken by the labours of Hunter, Portal, and Bichat. The latter, by giving to anatomy a physiological, and to physiology an anatomical character, prepared the way for that localizing of disease, which Broussais has the credit of more distinctly propounding. This localism our author thinks destined to be permanent.

In regard to auscultation, while its value as a means of diagnosis is acknowledged, the certainty of the minute results obtained from its indications, and the advantage of the finer distinctions announced by Laennec, are called in question. Louis himself, we are told, confesses that he cannot always distinguish between the crepitant and subcrepitant rhonchi, which belong respectively to pneumonia and bronchitis. In diseases of the heart, Mr. Mühry regards the indications from the stethoscope as even more uncertain; and cites as evidence of this uncertainty, the difference of opinion among auscultators as to the cause of the second sound; and likewise the embarrassment in distinguishing the two sides of the organ which may arise from its enlargement in hypertrophy. We are not quite prepared to go with him, in respect to the importance of these difficulties. As to the first, the experiments of Home, and the English physiologist have done much towards removing it; and in regard to the second, as the true size and position of the heart, when enlarged by disease, are not difficult to ascertain, there seems to be no reason why the distinction between the two sides should not also be made out with nearly the same accuracy as in the normal state.

In speaking of Louis and the numerical method, Mr. Mühry seems disposed to deduct somewhat from the anticipations which the ardent admirers of the latter have formed of it. As a mode of recording facts, and drawing general conclusions from them, he acknowledges its excellence; but, as he remarks, the patience to count does not always imply the talent to observe, or the tact to arrive at broad and widely useful results. He might have added, that to observe facts without any previous theory, that is, without previous belief in the connexion between one class of facts and another, between certain symptoms and certain morbid conditions, is impossible, and if possible, would render the labour of exploration endless. The very circumstances which inspire the suspicions of a particular disease being present, and lead to its investigation, are judged of by the light of previous theory. The warmest admirers of the numerical method will not maintain that the science of medicine is still to be rebuilt from the foundation, or that the labours of Hippocrates, Aretaeus, Sydenham, and Boerhaave, are useless, because their mode of observing had not the precision introduced by Louis, and their results are not mathematically stated. On the contrary, it is by confirming the conclusions of such men, that the modern method achieves its greatest triumphs. Time, it is said, destroys the illusions of opinion, but it confirms the decisions of nature. The faithful interpreters of

nature's laws, therefore, whether in ancient or modern days, have little to fear from their successors in the same path. The mode of conducting the inquiry may be varied, but the essential qualities, necessary to render the inquirer successful, remain unchanged.

In connexion with Chomel and his doctrines, we are informed of the treatment resorted to by the leading French practitioners in typhoid fever. Chomel himself employs chloride of soda, not only internally by the mouth and in clysters, but by baths, cataplasms, sprinkling the bed, and the extrication of the gas by decomposition. Piedagnel prescribes a daily draught of Seidlitz water, with strict diet. Fouquier, at la Charité, gives alum, twenty-four grains to a drachm, daily, in emulsion or in pills. Bouillaud, as a partisan of Broussais, applies leeches to the sensitive part of the abdomen.

Our author considers Andral as having adopted a middle course between the excessive tendency to generalize of the former French school, and the localism of Broussais. Andral admits that there are diseases of the alimentary canal which are not of an inflammatory character, and will not yield to the exclusive employment of antiphlogistic remedies. He employs also narcotics, tonics, stimulants, and antispasmodics. He has also succeeded in proving, to the satisfaction of his before incredulous countrymen, that cathartics may be administered without causing mischievous irritation of the canal, and that they may even prove useful in measles and scarlet fever.

The leading object of French pathology is to connect the symptoms presented during life with the appearances after death. No where is dexterity in opening bodies carried to greater perfection than in Paris. The subjects are sometimes opened from before, sometimes from behind, and sometimes laterally, according to the nature and object of the examination required, and all diseased or suspected tissues most carefully explored. With this zeal for pathology, however, is combined a proportional indifference in regard to treatment. The principal remedy employed in the French hospitals is starvation. It is no uncommon circumstance to hear the chronic, or convalescent patient, entreat the visiting physician, as he makes his round, for another half portion, or an additional loaf. They have even severe pains in the abdomen produced by hunger. The French practitioner also commits the common fault of prescribing for the name of the disease rather than for the particular case. A remedy which has once succeeded is tried indiscriminately in the same disease afterwards, without regard to modifying circumstances. Thus the constitution of the individual is lost sight of in the eagerness to gain a victory over the morbid affection; and the pale, emaciated, and half starved patient is subjected to farther depletion, when, according to the plain principles of common sense, tonic treatment and nutritive diet are imperiously demanded.

Our author gives some interesting details in regard to the experiments of Ricord, at the Venereal Hospital. The following are among the results. Ricord considers chancre a characteristic symptom of syphilis, equally well marked, and as specific as the pustules of small-pox. It is produced by a specific virus, the effects of which are regular and uniform, and may be produced at will by inoculation. The bubo supervening upon chancre is either sympathetic or idiopathic. In the latter case it is a gland chancre, that is, of the same nature with chancre itself, and capable of reproducing the latter, in its ordinary form, by inoculation. Ricord also announces, as among his conclusions, the distinctive character of blennorrhœa. Syphilitic infection produces only an ulcer, and if inoculated blennorrhœa gives rise to syphilitic phenomena, it follows that a latent chancre must have coexisted with it. In regard to the treatment adopted by the same physician, some curious particulars are also given. Where a chancre proves obstinate to local applications, he sometimes employs mercury internally. In many cases of secondary symptoms mercury seems to exert a specific agency; but acts upon the effects rather than their

causes. In secondary syphilis mercurials form the rule, antiphlogistics, sudatories, revulsives, the exception. Ricord employs the speculum, not only for examining the uterus, but as a means of making various applications. His ordinary injection for blennorrhœa in women is a solution of lunar caustic, one grain to the ounce. In severer cases, involving the mouth of the uterus, he injects into this organ a solution of nitrate of mercury. For this purpose he employs a double syringe, one part of which contains the solution, the other warm water. The injection is thrown up to the amount of a teaspoonful, and after it has been suffered to remain a minute, the water is injected. A sense of heat and pain is produced by the operation, which proves temporary only, and is not followed by any ill effect. Ricord considers blennorrhœa as contagious; that is, capable of being communicated in the same form to another individual. He thinks, however, that two persons can often accustom themselves to the disease in each other, so that a communication shall take place once, and no inconvenience follow afterward. This he calls *acclimation.*

Of phrenology it is observed as remarkable, that while this science has been extending itself by the labours of Gall and Spurzheim in England, France, and America, it should, in its native country, have sunk into comparative oblivion. Perhaps this may be explained by the consideration, afterwards mentioned, that this doctrine has retained in Germany more of its strictly anatomical character, while in other countries it has been more cultivated in its physiological and metaphysical relations. In this country, whatever may be the fate of phrenology as a scientific doctrine, it will be kept alive for a considerable time as a profitable trade. Our author remarks, rather happily, that the phrenologist can never want an answer to the scepticism of the incredulous, since this tendency to doubt is with him simply the result of a peculiar organism. He points to the organs on which depend belief and disbelief, and finds in them the cause of assent or denial. Is his explanation refused, the refusal is but the result of organic instinct; he again points to the organ of doubt, and claims even the obstinacy of his opponent as a triumph to his cause.

The most striking feature in English medicine, as contrasted with the French, is the importance attached to treatment. English pathology, we are told, rests much on physiology, anatomy, and the associate sciences; but most upon therapeutics, which form not only its object and end, but likewise its basis. English medicine does not reason forwards and backwards; it draws conclusions *ex juvantibus et nocentibus;* it is a science which determines to grow wise by experience. General pathology, or even general therapeutics, may not be carried so far by the English as by their rivals; but in the management of single diseases and particular symptoms, they have no superiors. At the same time it is acknowledged that it is far from being always easy to ascertain the precise grounds on which particular remedies are administered in English practice, or the precise object aimed at in the selection. The whole train of reasoning amounts often to little more, than that the remedy has done good in other cases, and therefore may be expected to do good in this.

One of the few diseases peculiar to England, is the catarrhus æstivus, or hay fever; a catarrh to which some persons are regularly subjected in the months of May, June, and July, and which is commonly ascribed to the effluvium of the hay. It is not amenable to treatment, but disappears of itself with the approach of autumn.

A somewhat protracted chapter is given on watering-places, better suited, perhaps, to a travelling guide-book, than to a professedly medical treatise. It is followed by a brief notice of quackery in England; an account of the opening of a mummy at the Kinnerton-street school; a few remarks on Oxford; and an essay on sea-sickness. We imagine the author's personal acquaintance with the latter must have been of short duration, if he met it merely in crossing from the continent to England and returning; and his speculations on its causes and

cure are somewhat amusing. He considers concussion of the brain as the proximate cause. He views the term sickness as inapplicable, because in disease the effect survives the cause which produces it; whereas in these cases, no sooner does the vessel arrive in smooth water than all the symptoms are entirely relieved, and the patient is at once restored to health. This result is not quite so certain as M. Mühry supposes, at least after sea-sickness has continued, as it often does at sea, for several weeks. As the most effective treatment he recommends lying in bed until the weather becomes calm, or the vessel arrives in port. We apprehend that on a voyage of any length, this is the worst course that can possibly be adopted; and where the passage is only a few leagues, the conveniences for such an expedient will seldom be found in any proportion to the number of the sufferers. To remain on deck, and persevere in active motion, until the head and the muscles accustom themselves to the rolling, will be found, in the generality of cases, more rational and effectual.

In connexion with French surgery, we are told, that surgical anatomy is less cultivated in France, and the structure of the parts concerned in operations less perfectly understood, than in England or Germany. From the facility with which fresh subjects are obtained, French students have little inducement to make injected preparations; and hence this important aid to the memory of the surgeon, is altogether wanting. Few preserved specimens, can be seen in France, of hernias, luxations, or aneurism. Works on surgical anatomy, which abound in England and Germany, are in France comparatively few in number. Particular mechanical processes, and among them that of bandaging, are carried to great perfection; and our author speaks in high terms of the operative skill of their leading surgeons. The French make more use of the bistoury in comparison with the scalpel, than their German neighbours. In dividing or slitting parts, the grooved director is much employed, and preferred to the forceps. Much attention is at present directed to the subject of autoplasty, and a work on the subject has recently been published by Blandin.

In the treatment of surgical inflammation, local blood-letting by leeches is extensively employed. Ulcers are managed without sufficient reference to their constitutional character. "German helcology" is still unknown. The favourite applications are emollient poultices, chloride of lime, sticking plaster, melted wax, &c. In regard to the employment of mercury in syphilis, French surgeons may be considered as forming two opposite parties. Cullerier applies it as a constant remedy; Ricord rarely, except in secondary symptoms.

Lithotrity still meets with much opposition at Paris. Its greatest enemies are Larrey, Sanson, and Velpeau. For the two former it has come too late; and the latter, probably, wants the manual dexterity to practice it with success. On the 5th of May, 1835, and at two following sessions, an animated discussion took place at the Academy of Sciences, in regard to the comparative benefits of the two operations. But as a full account of this discussion has already been presented to our readers, we need not enter again upon the subject.*

Velpeau is spoken of, and with justice, as the most industrious and persevering of the Parisian surgeons. His success in *concouring* for prizes is well known. His knowledge of modern improvements, as well in other countries as his own, is unrivalled, and enables him to pronounce with a decision, which now begins to be felt and feared, upon the merit and originality of new inventions and operations. Amussat still busies himself with the torsion of arteries; with strictures of the urethra; with lithotrity; and with the reduction of hernia. He employs the taxis with great perseverance, sometimes twenty-four hours in succession. He teaches surgery by operations on animals, and attaches much importance to the dexterity and the *sang froid* which may thus be acquired.

Ophthalmic surgery in France is said to have remained, until within a very

* See the number of this Journal for November, 1835, p. 118.

few years, in the same state in which it was left by Wenzel and Demours, at the close of the last century: to have been, in fact, over-looked in the general march of improvement. The reason assigned for this seems to be, that while the professed oculists have known little of surgery, the professed surgeon has applied general principles to this branch with too little regard for its peculiar feature. At present, however, ophthalmology is commanding more attention. Sichel and Carron du Villards give private instruction; Sanson has his clinics at Hôtel Dieu; and Velpeau, J. Cloquet, and others, are directing their attention to this subject. In operating for cataract, Roux prefers extraction to depression. No previous dilatation is practiced. The patient sits on a stool with his head against the breast of an assistant, and the operator in front of him. If there are two cataracts, both are operated on at the same sitting. Carron du Villards prefers reclination or depression. Velpeau, in his course at la Charité, distinguishes inflammation of the conjunctiva, the sclerotic, the iris and the lens, from each other. Farther than this, he does not discriminate; where the deep-seated parts are affected, he styles it internal ophthalmia. He also admits the influence of constitutional affections in ophthalmic disease; but refuses to go all lengths with the German doctrine of specific inflammation, and to allow that the form of the ophthalmia is determined by the peculiar character of the internal disease or derangement.

Under the head of English surgery, M. Mühry again remarks, that its basis is precise anatomical knowledge, and that anatomy is pursued with a zeal which the difficulties in the way of dissection serve only to inflame and encourage. Some of these difficulties, however, have been removed by the passage of the anatomy bill, the operation of which is such that, whereas previously the number of subjects, furnished to the London schools, did not exceed 300 each season, they amounted during the first year after this enactment to more than double the number.

Pathological anatomy is pursued earnestly and with great attention to system. The preparations in the museums are generally accompanied with a history of the case. These preparations are principally of hernias, urinary and arthritic, disease, strictures, stone, aneurism, medullary fungus, and accidental tissues. They are, in general, well injected. In some hospitals there are draughtsmen and modellers constantly employed, and in this way is the true history of the institution preserved. The Museum of the College of Surgeons, which consists principally of the old Hunterian collection, contains 20,000 pieces; and there are many smaller collections at the different schools. Urinary diseases, of which the specimens are very numerous, seem to be endemic to the English climate. In the collections of urinary concretions, it is easy to distinguish the uric calculus, the mulberry, consisting of oxalate of lime, and the light, large and frequent specimens of the phosphates. In the museums they are generally seen sawn across, so as to shew the concentric rings, and often exhibit a central nucleus of blood or mucus. They are marked with the history of the case, the operator's name, the weight and chemical composition. The disease is more frequent in Norfolk than in any part of England. The seaports and Ireland are comparatively exempt. This difference is partly accounted for by the more limited use of fermented liquors in the localities last named. Lithotrity is gaining ground in England. Besides Heurteloup, who devotes himself to the operation, Costello, Combe, and Crampton in Dublin, practice it. To these should be added Lizars, in Edinburgh.

Our author applauds the anatomical accuracy, the quietness, and the prudence of English operations. The patient is brought in with his eyes bandaged, the light falls from above, the operating table is simply constructed, the instruments are of good material and in good order. Rapidity of execution is little regarded, perhaps too little. New experiments are tried with caution, and in general the established modes are adhered to.

Specific inflammation, in the German sense of the term, does not appear to be recognised in England. Thus the doctrine of the specific forms of ulcers, as dependent on constitutional causes, and symptomatic of internal diseases, would hardly find favour. Hence, says our author, the medical treatment of surgical diseases is far from satisfactory. Moreover, the separation of medicine from surgery is entirely too complete. The number of practitioners, indeed, who unite both in their own persons, is considerable; but these being educated in the London schools as surgeons, have, he thinks, too exclusively a surgical or empirical bias, or rather an insufficient medical education. Edinburgh surgery is not very highly estimated in London; yet there is reason to believe that surgeons educated in the former city are better anatomists and physiologists than those in the latter. The distinction commonly made between them is, that in London anatomy is taught more accurately, but with too little reference to physiology, while in Edinburgh the latter is a leading object of instruction, but not based on exact knowledge of structure. In Edinburgh, medicine and surgery are studied jointly as parts of the same plan, and there is no distinct degree of surgeon. On the other hand, the separation is carried so far in London, that the medical treatment of the surgical cases is assigned to a physician; and the latter visits the patients with the surgeon. Many surgeons refuse to admit this arrangement, which, it is obvious, can only produce endless collision of opinion and of practice.

The first school of ophthalmic surgery in England was founded by Saunders, who died in 1814. At present there are three hospitals in London devoted to disease of the eyes, and many of the leading surgeons, as Travers, Lawrence, Tyrrell, Earle, Wardrop, and Guthrie, are occulists. Among those who have more exclusively devoted themselves to this branch are mentioned Ware, Adams, Phipps, and the popular operator Alexander. The practice of Guthrie is known by his preference for local stimulants; that of Lawrence by his partiality to full sanguineous depletion, even in chronic cases. In cataract, extraction and depression are both extensively employed.

The reform of alleged abuses is at present a prevalent topic in the medical community both in France and England. In 1829, the Minister of the Interior in France addressed a series of questions on this subject to the Academy of Medicine. The Academy appointed a committee, but in consequence of the political disturbances which followed, and the excitement respecting the cholera, no report was returned till October, 1833. The committee propose to add to the three existing faculties in Paris, Strasburg and Montpellier, three others: one in Lyons, one in Rennes or Nantes, and one in Bordeaux or Toulouse. The board of examiners are not to be drawn exclusively from the faculty, but a third of the number from practitioners of the city or neighbourhood. Among other improvements suggested are the abolishing of the Officiers de Santé, (an inferior order of practitioners,) the suppression of quackery, and the recognition of foreign degrees. The second object is to be accomplished, not by refusing patents for nostrums, but by first submitting the article to the Academy of Medicine, by whom its novelty and usefulness shall be judged of, and by imposing a tax, which for a five years' patent is to be fixed at 500, for ten years at 1000 francs. Such a law, if carried into execution, would undoubtedly keep this trade of nostrum-vending within very narrow limits; but we doubt whether so much power could be safely entrusted to any hands, but those of a small and responsible board of commissioners.

Reform in England is a more complicated question than in France, from its connexion with the rights of chartered institutions, with the confirmed habits and associations of the people, and with political parties. There are in London three medical corporations which have the right to confer degrees, viz: the Colleges of Physicians and Surgeons, and the company of Apothecaries. Graduates from each and all of these are practitioners, but with different orders

of privileges, and holding very different positions, as far as their profession is concerned, in society. There are also the Universities of Oxford and Cambridge, the London University, and now King's College, all which have the right to create doctors in medicine. The antiquity of the College of Physicians is well known. The expense of obtaining its honours is very great, and its members are forbidden to practice surgery or midwifery on pain of expulsion. The whole number of members in London is about 460. The College of Physicians is very rich. Its yearly income is said to be £4,115. The College of Surgeons consists of members distributed over England and Wales, and is a much more numerous body than that last named. Between the years 1823 and 1833, there were 4,621 candidates examined, of whom 4,305 were admitted. The members practice both surgery and medicine, with the exception of a few who devote themselves to the former, and are called pure surgeons. This college has in its possession the Hunterian museum, and owns a library of 20,000 volumes. The Apothecaries' company includes what are called practising apothecaries, who visit patients, and, in place of prescribing, furnish medicine from their own shops. Until recently they were not permitted to charge for attendance, their whole profit being derived from the sale of the articles ordered. Their principal building is Apothecaries' Hall, where all articles requiring chemical preparation, are put into an officinal form, so that little is left for the individual apothecaries but the mixing, and putting up of prescriptions. The number of these "general practitioners" in England and Wales, amounts to 10,000. About 400 applicants are examined yearly. They are, in fact, the medical attendants of the middling classes, and even of the rich in ordinary cases. In important exigencies they sometimes call a regular physician in consultation, but this is rarely done in the country.

The Colleges of Oxford and Cambridge, considered as medical schools, hardly deserve mention. The number of students at each somewhat exceeds twenty. The examinations are mere formalities; at the graduations frequently no one is present but the candidate and the beadle, and the thesis itself is prepared by the latter functionary. Dr. Kidd, regius professor of medicine at Oxford, declared to the parliamentary commission, that to the obtaining of the honours there was absolutely no medical education necessary. Their general education as graduates of the college is always respectable, and they have generally some medical knowledge acquired at London, Edinburgh, or Paris; never in Cambridge or Oxford.

The medical abuses complained of in England, therefore, are mainly the following: The education at the universities has become a mere form. Political and legal medicine are neglected. The number of regular physicians is too small, and they are continually encroached upon by the general practitioners, who, at the same time, are not sufficiently respectable practitioners of medicine. The separation of medicine and surgery is too wide; midwifery is in too little esteem; the chemists and druggists require regulation, and quackery is a crying evil. By the distinction of ranks in the same profession, its whole spirit is narrowed, and its elements rendered discordant; the developement of medical talent is counteracted, and the welfare of the public compromised. In these respects the desire for reform seems to be universal. Petitions to this purpose have, in fact, been addressed to parliament, one of which was signed by a large number of the most respectable physicians in London. A select committee was in consequence appointed, at the head of which is Warburton, the advocate of the anatomy bill. No report had been received when our author wrote, and we presume none has been offered since. In fact, with all the alleged omnipotence of parliament, we doubt if it would be possible for them to reconcile the conflicting interests, or appease the jealousies of these learned bodies. They are essentially jarring elements, and must act and react upon each other until harmony is restored. Any force from without

would but increase the evil. Such, however, is not the opinion of our author, who anticipates, in the forthcoming report, an evidence of the sagacity with which the British parliament can reform abuses, without compromising existing privileges.

In a single chapter, which has for its title "A Glance at Germany," we are presented with an account of what our author calls the "ideal age" of German medicine; a period which commenced toward the termination of the last century, and is only now giving place to an age of sober reality. With regard to the influence of the misty theories of this period in obstructing the mental vision of his countrymen, and leading them away from the true path of medical observation, we are willing to take his assertion upon trust; to follow him into this world of visions transcends our powers. Two of the most modern of these German speculations, which he takes especial pains to explain, are worth mentioning, if only for their singularity and extravagance. The first is that of Charles R. Hoffmann, who finds a type of every disease to which man is subject in the normal condition of some inferior animal. In rickets, for example, the patient becomes an invertebrate animal, a molluscus. Dropsy consists in the degradation of the man to a hydatid, &c. It would be difficult to imagine a more absurd conceit. The second of these airy fancies is that of Schönlein, who regards diseases themselves as possessed of life, analogous to that of plants. He divides maladies into families and species, speaks of the cryptogama and phanerogama, of the seeds of disease, its geographical distribution, its imperfect forms, &c., as in botany. The absurdity of all this is not so palpable, because these expressions are in common use, in a metaphorical sense; but when we come to the definition of particular diseases, the entire inapplicability of terms derived from botany becomes at once evident. Herpes, for instance, is described as "a common pericarp, the fruits standing together in clusters, most of them vesicular fruits." This will serve as a sample of Mr. Schönlein's system. We presume our author does not consider these as the first fruits of the improved state of German medicine. They are indeed but examples of the laborious trifling of a laborious people; and, as foreigners to him, we regret that, in place of amusing us with the poetical fancies of his countrymen, he had not carried out his professed design by placing before us the prominent features of German medicine and surgery at the present day. Even for his German readers, such a task, if well executed, would not have been wholly superfluous; and to those of other countries into whose hands he himself seems to anticipate his work may fall, it would have served materially to enhance its value. E. G. D.

Art. XII. *Practical Surgery, with one hundred and twenty engravings on wood.* By Robert Liston, Surgeon. London, 1837. 8vo. pp. 494.

In the preface to this work the author announces his object to have been "to produce a work which should be useful to the students of surgery and young practitioners,—a plain, common sense view of the most important injuries and diseases which are met with in practice, unencumbered by speculations or theories, and accompanied by simple directions how to conduct the treatment." Having this object solely in view, and writing, as the author does, with great conciseness, it will not be expected of us to give a full analysis of his book. Our readers can only look for a general notice of its merits and demerits, together with brief specimens of the author's style and mode of treating his subject, and a candid opinion of the manner in which, as a whole, it is executed.

In the fifteen chapters into which the volume is divided, the following subjects are severally treated of, viz.: Division of parts by the knife, ligature, and

escharotics; union; injuries and diseases of the bones and joints, integuments and muscles, serous cavities, mucuous canals, genito-urinary organs and blood-vessels; restoration of lost parts; morbid growths and enlargements; amputations; hernia, and congenital deformities and deficiencies. The most original parts of the work are those which treat of the dressing of wounds and restoration of lost parts; and, these, coming as they do, from an eminently practical man, are worthy of particular attention. He strongly condemns the practice ordinarily pursued in the doing up of wounds, which consists in the employment of thick lint, spread with healing ointments, compress cloths, charpie and bandages, all which, not unfrequently loaded with putrid exhalations and fetid matter, tend to produce an excited action in the parts beyond what is necessary, which is followed by profuse discharge from the surfaces that are thus prevented from uniting. The system is pronounced "a bad one," and the applications "filthy and abominable." In place of these usual dressings, he advises that in large wounds, as those resulting from amputations, "the close apposition and the application of all retentive means be delayed for six or eight hours," during which time lint, dipped in cold water and frequently renewed, may be applied in order to abate the extreme sensibility and moderate the oozing from it. At the end of this period the part is to be thoroughly dried, the coagula removed, and the edges brought carefully into contact, and retained by narrow slips of adhesive plaster, placed at intervals. The plaster in common use, he thinks heating and wanting in adhesive properties, and one composed of a solution of isinglass in spirit, and spread on slips of oiled silk, is offered as a substitute for it.

"No other dressing need be employed in the first instance; no compress, no pledget, no bandage. A roller may be applied in a few days after some amputations, in order to promote the subsidence of any slight œdema that may have arisen, and to bring the stump into a nice form. At an earlier period the use of any dressing whatever is productive of pain; it heats the part, and encourages discharge of blood and formation of matter."—p. 31.

The discharge that does take place in this simple mode of dressing, is to be wiped from the surrounding skin as it flows out; and if much inflammation follow, a piece of lint, of a sufficient size to cover the wound, soaked in tepid water, and overlaid with oiled silk to prevent evaporation, is to be used in place of a poultice. The mode of dressing *here* deprecated by our author is, we are convinced by our own experience, frequently productive of bad results after amputations and *in* other large wounds. All of the amputations that we have ever witnessed have been dressed in the manner stated, and we never yet have seen a stump healed by the first intention. For this result we blame in a great measure our mode of dressing, and the one here advised is so simple and so much in accordance with our own observation, that we would recommend it to the favourable attention of our readers, and when opportunity offers, shall make trials of it.

Injuries of the bones and joints are among the most frequent and most important which the surgeon is called upon to treat, and we think that, in a work intended expressly for the use of those entering upon practice, more precise directions for the treatment of at least the more common of these injuries might with advantage have been given. The proper management of fracture of the thigh-bone is, perhaps, more difficult than that of any other. The symptoms of fracture of the neck of this bone are well pointed out by Mr. Liston, but we observe the omission of one practical remark of importance in the diagnosis of accidents of this nature, which it may be well to signalize. Frequently, whether the part be without or within the capsule, but particularly in the latter case, the shortening is at first very slight. To judge of its existence, our author is satisfied with directing that a close comparison of the two limbs, of the ankles and knees, should be made. Now, in many instances, the shortening of the

member is at first not more than a half or three-fourths of an inch, and cannot be detected by any mere inspection alone, however close. To ascertain it, accurate measurement of the two limbs must be made; and, as injuries about the hip, particularly in muscular persons, are often obscure, it is a matter of importance to ascertain very exactly whether or not the member be really shortened. The only measurement to be depended on is that from the anterior superior spinous process of the ileum to one of the malleoli, care being first taken to place the pelvis perfectly straight. For fractures within the capsule in old persons, Mr. L. recommends the treatment, now generally adopted with us, of merely putting the limb at rest, giving it a good position, and rendering the patient as comfortable as possible. Fractures immediately without the joint unite readily enough, even in elderly persons, and here it is proper to extend the limb by a suitable apparatus. The extended position is thought by Mr. L. to be the most effectual and least annoying to the patient in the treatment of all fractures of the femur, except where the seat of it is very high up, when he makes use of the inclined plane. In speaking of the treatment of ununited fractures by the seton, Mr. L. condemns the usual mode of allowing it to remain so long as to keep up a free discharge from the part—a principal cause, we imagine, of some of the failures that have occurred with this treatment.

Injuries and diseases of the blood-vessels are well discussed in the sixth chapter, where excellent advice is given as to the treatment to be pursued in punctured or indirect wounds of the arteries:—

"If blood has flowed freely from the external wound, if the hemorrhage has taken place again and again to an alarming extent, and is likely to recur, the sooner the vessel is cut down upon, the wounded part exposed, and treated as already recommended, (the application of a ligature to each extremity,) the better. There is no use in waiting for a fresh attack of bleeding. The situation of the wound, and the history, ought to satisfy the surgeon of the line he should take, and that must be adopted at once, without hesitation or delay. It will thus be done much more coolly and satisfactorily, than amidst the confusion and alarm incident upon the hemorrhagic attack. If, again, effusion of blood have taken place into the tissues of the limb, around the wound in the vessel, the external opening is small, has healed, or nearly so, and has not for a time furnished blood, then there is no occasion for instant operation. The extent of the effusion, the size and site of the aneurism, will decide the surgeon as to the proceeding in the particular case. If the tumour is small and recent, there being little or no coagulum, and the vessel involved is superficial, then the incision may pass through the aneurism to the point of the vessel which has been wounded. The certainty of a cure will thus be enhanced. If the sac be only filled with fluid blood, and the anastomoses are free, there is risk of a return of the pulsation, or a continuance of the disease, if one ligature only were applied. Nothing here contra-indicates the incision on the injured part. But when the tumour is large, and of some standing, ligature of the trunk betwixt it and the heart, will in all probability be followed by a successful result, and the operation will be attended with less difficulty and risk, under the circumstances, than would be the incision of the sac, and the groping amongst disordered parts for the open vessel."—p. 156.

In amputating, Mr. Liston gives a preference in all instances to the flap, over the circular, or, as he is pleased to term it,

"The old, roundabout, tedious, painful, and imperfect operation. Not but that, in some situations, a good operator can make a very fair and good stump by the circular method; but it is, generally speaking, attended with much more suffering, and the results are not by any means so satisfactory. A surgeon must take great pains, and deserves infinite credit, if he makes any thing of a tolerable stump, more especially where there are two bones, by any other than the mode by flaps; he may cover the bones certainly, but only by integument, separated by a painful process from its connexions, and slow, therefore, in contracting new ones."—p. 317.

The comparative advantages of these two modes of operating need not here be mentioned; we will only remark, that surgeons in this part of the world,

continue to make, even where there are two bones, very satisfactory stumps by the old fashioned circular operation, which, without being exclusive, we would, despite the high authority of Mr. L., in many instances prefer and recommend.

Bad operators and ignorant surgeons are, we are aware, every where to be found; but from the following remark we are induced to think them rather abundant in Great Britain, as otherwise it would have been impossible for a civil surgeon, even when connected with a large public institution, to make the following avowal:—

"I have had occasion to operate on *some dozens* of bad stumps, and, as already hinted, the necessity for doing so will constantly arise, until more care is taken in performing this very easy operation, as it is considered, and until a better system is in general use; (there is no difficulty in removing a limb, certainly, but to do it well requires considerable dexterity, and careful attention to the various steps of the proceeding;) even in following a good plan, mistakes may occur, through carelessness or inattention, and bad enough stumps have even resulted from the flap method."—p. 324.

In the chapter on the restoration of lost parts, the formation of a whole nose, restoration of the alæ, raising a depressed nose, cheiloplastic, and otoplastic operations are treated of. These subjects have all been much neglected with us, but have been brought to a great degree of perfection in Europe; and may, under favourable circumstances, be undertaken not only with safety, but with every prospect of success. The works on surgery in general use in our schools, leave unnoticed these important operations; and Mr. Liston, who has had frequent opportunities for performing *them*, merits on this account especial thanks for having devoted a chapter to this subject. It contains just what is wanted by the student—a brief and clear description of the simplest and best methods of performing these operations. Mr. Liston, it may be remarked, is in high repute in London as an operative surgeon. He is bold, skilful and original. His experience, both in public institutions and in private practice, has been great; and his talents, which are acknowledged to be of a superior order, have been long in a particular manner directed to the operative part of surgery. These various qualities and opportunities combined, were eminently calculated to fit him for the task of preparing a valuable practical work. Throughout, his own mode of treatment and his own methods of operating only are given, and, as a whole, these may be pronounced good. The style is clear and easy. Conciseness has been happily studied; and though our own individual taste would have been better pleased with more minuteness of detail in some parts, yet still we unhesitatingly recommend the work as being well adapted to those for whose use it was more especially designed, and one which will bear comparison with the best treatises on operative surgery in our language. G. W. N.

Art. XIII. *Boylston Prize Dissertations, for the years* 1836 *and* 1837. By Oliver Wendell Holmes, M. D., Fellow of the Massachusetts Medical Society, and Member of the Societé Médicale d'observation of Paris. Boston: Charles C. Little, and James Brown, 1838. O. p. 371.

These dissertations are three in number, and obtained for the author the Boylston prizes for two successive years. The first in order of time, is the essay on the Utility of Physical Exploration in the Diagnosis of Disease. The necessity for such a dissertation is becoming less and less evident, in proportion as the physical means of exploration are more generally introduced into practice, and become a part of the every-day examinations of patients.

But as all practitioners are not familiar with physical exploration, and as there still remains a small number who are not even yet convinced of its necessity, the essay of Dr. Holmes, which is written with spirit and force, may be of much utility, and is well fitted to give us a high idea of his powers as a writer, and his familiarity with the subject. The best way of proving the utility of the physical signs is to indicate the diseases to which they are applicable, and the almost complete impossibility of arriving at a correct diagnosis without them. Dr. Holmes has succeeded in this object by frequent reference to authorities, which are rendered more conclusive by his personal knowledge of auscultation.

The first essay of the volume is devoted to a subject of a more original character. The determination of the time, and the places, at which intermittent fever has prevailed in New England. Those who are familiar with the rocky soil of New England, the coldness of the climate, and the small quantity of low and marshy land to be found within its borders, may readily believe that intermittents must there be rare; as these diseases prevail extensively only in those parts of the United States which present widely different circumstances of soil and climate.

It would have been easy to answer this question in a loose and careless way, but no scientific good would have resulted from the investigation unless it had been pursued in such a spirit as to give precision to the results. Dr. Holmes has adopted the only means of reaching the true conclusion; he has carefully examined a mass of documents, and compared them together to correct their errors. With but few and meagre materials, he has determined the locality and the duration of intermittents with great apparent precision. The disease is rare in New England, and has never been frequent, but some localities which are now quite free from it, formerly presented numerous cases, and were occasionally the seat of severe epidemics. It never prevailed extensively, except in the valley of the Housatonic, a stream which passes through the western part of Massachusetts and Connecticut. In this valley, which has a rich alluvial soil, containing many ponds of water, intermittents have frequently appeared, and have offered at times the characters of the most malignant diseases of the southern states. Of late years they have become rare.

In the valley of the Housatonic, bilious fevers and dysentery, as well as simple intermittents, have prevailed, in the same manner as these diseases are nearly always observed together, in the West Indies and Southern states. These fevers occur throughout the valley, which consists of low, marshy ground, overflowed by the inundations after the melting of the snow in the spring. Two severe epidemics occurred in the years 1794 and 1796, of unusual mortality. These epidemics were limited to the immediate vicinity of two mill ponds, and in both cases occurred at the dry season of July, and the subsequent months, when a large tract of ground overflowed by the pond, was exposed to the sun. In the latter year the sickness occurred a few years after raising the dam, by which the pond was deepened, and overflowed a considerable tract of country covered with luxuriant vegetation. The close connexion of these epidemics with the ponds is the more interesting, because they were limited in extent, and occurred in a country where epidemics of this nature are rare. In the southern states it is often difficult to prove the connexion between marsh and intermittent, on account of the large extent of country covered by the same marshy, or at least, alluvial soil.

The ordinary laws of intermittents are thus confirmed in New England, where very limited and rare epidemics have occurred as destructive as those of Holland, or of the warmer countries of the south. The soil is vastly more effectual in preventing the developement of these fevers than the climate, and is probably the cause of the almost entire exemption of the New England states from this scourge. Their granite rocks, which are covered by a thin stratum

of comparatively barren earth, give to the inhabitants the ruddy complexion and muscular strength, which are so rare in more fertile, but less healthy regions. In the greater part of these states, the industry of Dr. Holmes has discovered only a few localities in which intermittents have once prevailed, almost none in which they now occur. These are chiefly to be met with near the alluvial deposits of streams of water.

The last essay is on the subject of Neuralgia; it contains a good analysis of some of the best works upon the subject, but is less interesting to us than the accompanying memoirs. W. W. G.

Art. XIV. *Lectures on Lithotomy, delivered at the New York Hospital, December* 1837. By Alexander Stevens, M. D., Surgeon of the New York Hospital, and Emeritus Professor of Clinical Surgery. pp. 93. With 5 plates. New York: 1838.

The two lectures under notice are part of a series by Dr. Stevens, now in the course of publication. The first presents a rapid view of the lateral operation for lithotomy, a statistical table of its results, some comments upon the causes of death after the operation, with certain objections urged against it, and illustrative cases. It then offers some anatomical remarks on the parts involved in lithotomy; and concludes with a short history of the Celsian and bilateral operations; a statement of the advantages of the latter over all former modes of extracting calculi by the perineum, and the announcement of a new operation.

This lecture, though possessing little novelty, contains passages which may prove of considerable value to the student. The anatomical description of the relation of parts in the anterior portion of the perineum, accompanied, as it is, by measurements and diagrams, would be calculated to give accurate ideas of great importance to those who are not yet familiar with the subject, (and we fear this class would include some who have already fleshed their knives in lithotomy,) were it not that an extraordinary carelessness, in correcting the press, has rendered the text imperfect, and the second diagram, with its references, almost unintelligible. What with letters misplaced, overturned, reversed, and misquoted, we doubt whether this very well contrived little figure will convey any idea whatever to a tyro.

Dr. Stevens deserves our thanks for calling public attention in this country to the bilateral operation. He is, we believe, the first who has published cases with results; for, although Dr. Ashmead of this city, had performed the operation of Dupuytren not less than five times, and always with success, at the time when our attention was last drawn to the subject, we believe that the only public notice of his cases appears as an incidental remark in a former communication in this Journal. (See number for February, 1836, p. 423.)

Dr. S. has not been disposed to underrate the dangers of the lateral operation, and this is wise; for the reported results of some of the most extensive lithotomists, especially in our own country, are calculated to lead the young and enthusiastic surgeon into a contempt of those dangers, much more unfortunate now than formerly, because we have at present another, and, in many cases, a much safer mode of operating, through the route of the urethra. Without pretending to copy the example of many of the warm advocates of lithotripsy, who do not hesitate to tax some of the most fortunate of their antagonists with bad faith in the statement of cases, we feel compelled to call the attention of students to the fact that the most favourable reports are unattended by many of the details necessary to furnish data for a fair calculation of the dangers of the operation. We are very rarely told with what degree of care the cases are collected, how long they remained under the eye of the surgeon, how many have succumbed to

secondary affections due to the irritation of the wound, but attributed by the somewhat partial judgment of the operator to other causes, &c. This subject has been so hacknied of late years, that we avoid the repetition of the tabular results noticed in our review of the celebrated debate on lithotripsy before the Academy of Medicine. (See this Journal, No. XXXIII.) In the Pennsylvania Hospital, for seventy-nine years preceding 1835, no deduction being made for deaths from pre-existing or subsequent causes, complications or other sources of self-deception, misstatement, or subterfuge, the number of deaths following lithotomy was to the number of operations performed, as 1 to $7\frac{3}{7}$. Having been familiar with the customs of this institution for more than twenty years, we feel confident that the cases of calculus admitted to its wards, comprise as fair a representation from all classes of society except, perhaps, the most vicious of the poor, and from all conditions of constitution, as could be readily selected: moreover, the cases in this establishment are never discharged till the results are fully ascertained. The operations during the entire period, with a single exception in favour of the lithotome caché, were performed, we have every reason to believe, with the cutting gorget; and the operators were very generally the best surgeons of the country. If, then, a proper allowance be made for the hospital air, in this neatest of all hospitals, and for the superiority over the gorget, claimed by some surgeons for the blunt bistoury or other lithotomes employed in the lateral operations, we might safely state the minimum of mortality, under average circumstances, at one case in ten.

If decidedly greater success than this be reported by any individual operator, reason would teach us to infer some remarkable advantage in the healthfulness and vigour of the community, where he has the good fortune to reside, some extreme caution in selecting none but the most promising cases, some carelessness in ascertaining the results before reporting them, or self-deception in erroneously attributing deaths after the operation to causes independent of it.

The task of proving the accuracy of such reports rests with the reporters, and the surgical world demands more circumstantial details of the cases than it has yet received, before it will be content to make them the basis of calculations, by which the safety of operations and the reputation of competitors are to be adjudged. The operation, though highly dangerous, is simple, and quite within the capacity of all surgeons of tolerable mechanical tact, who have studied with any attention the anatomy of the perineum. That any material difference of result can be determined by superior manual skill, among those who are warranted in undertaking the graver operations, we cannot believe; and inferiority, either in this respect, or in relation to the after treatment, could not be charged against the surgeons of the Pennsylvania hospital, at any time, since the birthday of clinical instruction in America.

The lateral operation being thus surrounded by serious dangers, Dr. Stevens has bestowed an important favour on the profession by directing its attention to the bilateral method of Dupuytren; and also, by his endeavour to improve it.

We cannot consider any results deduced from the observation of ten, fifteen, or twenty cases of lithotomy, as entitled to much confidence, and the number of instances within our knowledge, in which the bilateral operation has been performed, is not sufficient to warrant any conclusion as to its effects, drawn from experience alone; but there are certain broad principles of mechanics and physiology, which are often more valuable guides than any limited experience; and according to these laws, the bilateral is more promising than the ordinary lateral operation. The great object of the surgeon is to create a passage through the perineum into the bladder, of sufficient width to permit the free extraction of the calculus; while the chief danger to be avoided is undoubtedly the division of a portion of the deep-seated or third fascia of the pe-

rineum, all other untoward and important accidents being the result of abnormal structure, peculiarity of constitution in the patient, or culpable ignorance and carelessness on the part of the operator. If, then, it be only necessary to confine the incision within the limits of the prostate gland, in order to avoid the risk of subperitoneal infiltrations, why is it that the parts are subjected to distension or laceration by confining the outlet to one side only of the prostate gland? There is certainly no peculiar sanctity in the right side of this organ, and we can scarely comprehend the reason why it continues under a taboo with the majority of surgeons, now that Dupuytren has substituted for the rude old Celsian method, a beautiful and certain operation. By this latter plan, double space is gained, with increased safety to the rectum, without any enhancement of danger to the seminal ducts, and with even less risk of wounding important vessels than attends upon the lateral method. The wound is smooth and even throughout its whole extent, which is very rarely the case when the gorget is employed, and the only complication produced by the operation is the double division of the membranous portion of the urethra, which cannot be regarded as important.

Dr. Stevens, however, attacks the double lithotome of Dupuytren, and the improved instrument of M. Charriere, in no measured terms.

"The double lithotome of Dupuytren ought not to be employed by any one who is not thoroughly drilled in the use of it. He must handle it as he would a double-barrelled hair-trigger pistol, and be prepared to lacerate the urethra while passing its beak along the groove of the staff. It is liable to the same objections as the bistouri caché of Frère Côme, in that it must expose the fundus of the bladder to injury; and the more especially as the urine is always discharged through the distended and lacerated urethra before the blades are opened. I cannot think it unattended with danger to open a cutting instrument even with blunt points in the contracted bladder. An unlucky movement of the patient might push the bladder against these points; and if not, the internal membrane of the bladder must come in contact with the edge of the instrument."—"An attempt to make the incisions spheroidal is a useless refinement, &c."—p. 47-8.

We have not experimented much with the instrument of M. Charriere, which, according to Dr. S., is liable to the more important objections just quoted, but there appears nothing in its construction which should render necessary a laceration of the urethra, if the groove of the staff be sufficiently large and the instrument itself properly delicate. If "the internal coat of the bladder must come in contact with the edge of the instrument when expanded," as it must be, "within the cavity," then will the parietes of the bladder be inevitably divided, unless accidentally relaxed in an unusual degree; but the best answer to this objection is the fact that although the operation has been repeatedly performed, we do not hear that the accident dreaded by Dr. S. has yet occurred. The truth is that the urine cannot be immediately and completely evacuated through the urethra when nearly filled by an instrument, and even when discharged suddenly through a wound, the bladder, if unaffected with spasm, cannot contract firmly until after some lapse of time. But without wishing to underrate the danger to the body of the bladder from the presence of such blades within it, we only desire that those who compare the lateral with the bilateral operation, should remember that gorgets also have been plunged into the cavity of the abdomen by those who knew something of surgery. With regard to the experience required in handling the double lithotome caché, so far from agreeing with the lecturer, this very instrument would be selected by us from the vast apparatus for lithotomy as the very safest in the hands of a mere tyro. So far from thinking it requisite to move with "mathematical precision" to avoid making "a jagged wound" in attempting a spheroidal incision, we think the spherical cut the best compromise between the various dangers which surround lithotomy, and that best calculated to avoid a raggedness of the wound, such as is produced almost without exception when the gorget is employed, and

also, whenever the enlargement of the original orifice by the bistoury becomes necessary after the bladder has been entered. The form of the double lithotome is such that the tendency to a regular curve in the incision must be designedly resisted to prevent the smoothness of its course. The prostate gland is not "absolutely motionless," as Dr. S. infers; neither is it absolutely incompressible; but, precisely as it approximates to these conditions, the difficulty of making a jagged wound, unintentionally, is increased.

The greatest objection to the instrument now under consideration, and it is one of no slight importance, is the extreme length and tenuity of the blades, which renders them flexible under the pressure to which they are subjected on their expansion, and causes an uncertainty in the extent of the deepest part of the incision, unless the instrument be introduced too far within the cavity of the bladder. This objection is alluded to by Dr. S., and on this account, chiefly, we felt anxious to examine what the author promises in the terminal sentence of the first lecture, namely: "a more simple and safe method of performing the bilateral operation."

The second lecture is devoted chiefly to the description of the proposed new method, with two cases in which it was practiced, and some remarks on the mode of preventing or relieving the accidents consequent to lithotomy. Our remarks will be confined exclusively to the instrument which Dr. Stevens denominates the prostatic bisector. The employment of this knife constitutes the only important peculiarity of the new method. It is composed of a strong, straight metallic handle, terminating in an elongated elipsoidal enlargement. Upon the extremity of the long diameter of this mass of steel is found the ordinary gorget beak designed for traversing the groove of the staff. On each side of the beak, and extending thence around the elipsoid to its junction with the handle, there is a thin, projecting cutting blade, with its edge standing directly outward at a right angle with the surface. This instrument enters the bladder in the manner of a cutting gorget, and its inventor entertains the opinion that when the prostate gland is stretched by the staff, it divides this organ on each side in a direction obliquely toward the tuberosities of the ischia; this we should be somewhat inclined to doubt, unless assured that the fact had been ascertained by examination post-mortem. The resistance offered to the progress of the knife is said to be exceedingly slight, notwithstanding the large elipsoidal mass which accompanies it, and which must occasion either a considerable and forcible dilatation of the opening in the prostate, or an extension of the incision beyond the mere transverse diameter of the instrument. The latter result should be taken into consideration by those who order the construction of the instrument.

The advantage produced by the anterior or upper half of the elipsoidal expansion is not very apparent, and it appears calculated to render the position of the beak in the groove of the staff somewhat uncertain, especially in unpracticed hands; for, by a little elevation of the handle, it would act as a lever to throw the former out of the latter. We would also suggest to the inventor the propriety of flattening to a considerable extent, the posterior half of the elipsoid; for so great a thickness of metal cannot be required to protect the rectum, unless an unnecessary breadth should be given to the cutting blades; and the undue inclination of surface which the elipsoid presents to the resisting medium through which it is made to pass, must produce a constant tendency to an improper elevation of the handle, and endanger a plunge of the beak out of the staff. We make these suggestions with the more freedom, because a new instrument may be perfectly safe in the hands of its inventor, who is fully acquainted with all the principles involved in its construction, yet may prove highly dangerous when entrusted to other operators whose experience and mechanical tact are less considerable.

The chief advantage over the double lithotome, possessed by the prostatic bisector, consists in the firmness of the blades, and the certainty that if it en-

ters far enough, the opening in the bladder cannot be less than the remainder of the incision. We do not perceive that it offers greater security to the rectum, or that the obliquity backward, claimed for the direction of the incision, is well established. There appears to be no essential difference between the risk of infiltration in the operations of Dupuytren and Dr. Stevens; and, as to the danger of wounding a bladder spasmodically contracted, or completely evacuated, we must frankly confess that unless the projection of the blades bordering the long, lanceolate extremity of the bisector be made so slight as to be incapable of dividing the whole thickness of the parietes, we would prefer, in our own case, the presence of the expanded ends of the double lithotome, even if advanced two inches within the cavity. It is more than probable that neither of these instruments has yet reached its highest perfection; and although the domain of lithotomy has been limited, and will hereafter become still more closely confined by the progress of lithotripsy, yet every new proposal to simplify, or improve the former, must always continue deserving of a careful examination.

The lectures under notice contain many remarks of much value to those who propose to devote themselves to surgical practice; and we hope not only to see the series continued, but also to witness something more like typographical justice extended toward them by the publishers. R. C.

Art. XVI. *Luxationes Experimentis Illustrat. Dissertatio inauguralis quam consensu gratiosi Medicorum ordinis Basiliensis pro summces in Medicina et Chirurgia honoribus rite impetrandis.* Scripsit Ludovicus de Wette. Basiliensis: 4to. pp. 44, and two lithographic plates. Berolini: 1835.

Inaugural Dissertation on Luxations; Illustrated by Experiments, &c. By Ludovicus de Wette, &c.

This is one amongst a great number or very clever inaugural dissertations, which emanate annually from the medical schools of Germany. Would that our own students had but a tithe of the industry and acquirement displayed by those of our German cotemporaries—for in native talent we must claim for them an equality—we should not then be exposed to the humiliating conviction, which every day's experience obtrudes upon us, that the thesis in our own country is no longer regarded as a test of ability or attainment, but is degraded into a mere formality.

The dissertation of Mr. Wette, the subject of which, he informs us, was suggested by Professor Froscip, treats chiefly of dislocations of long standing; the principal object of the author being to indicate the principal anatomico-pathological changes which the parts undergo, when their natural solutions have been changed. In an introductory section, he treats of the general healthy and diseased characters presented by the several structures composing the joints. The author then proceeds to detail the result of his inspection of luxations of very different periods of duration—from one day up to three months. He does not pretend to describe all the changes and accidents developed in the parts concerned, but confines his attention, mainly, to the investigation of the several steps by which a new joint is formed, to receive the head of the displaced bone.

Mr. Wette has not only shown considerable industry and ability in collecting the original observations by which his dissertation is enriched, but has also manifested an intimate acquaintance with the labours of his predecessors and cotemporaries on the subject of his investigations. He has executed his task in a manner that would reflect credit on one of maturer years; and has collected together more information upon the pathological anatomy of dislocations, than we have seen any where condensed into so small a compass.

Art. XVII. *Introductory Lecture delivered at the opening of the Session of the Medical College of the State of South Carolina, on the second Monday of November*, 1837. By E. Geddings, M. D., Professor of Pathology and Medical Jurisprudence, and Dean of the Faculty.

Nothing which tends to expand the views of medical students upon their first entrance into professional study, or which is calculated to convey to their minds a just idea of the vast extent, the almost interminable collateral ramifications, and the numerous divisions of our science, can fail to be regarded by the enlightened members of our profession as highly important. We congratulate the Medical College of South Carolina on the accession of such a teacher as the author of the present lecture, the first born son of her own halls, who brings back to his alma mater the acquirements she bestowed on him at the commencement of his career, increased many fold by travel, experience, and foreign study. Dr. Geddings has established a name over a sphere far wider than his native state; he has the learning, the industry, and the expansion of mind necessary to render him known beyond the boundaries of his native land, and the limits of his natural life; and these facts, familiar to us from his previous labours, are sufficiently obvious from the tenor of this very lecture. Although the virtue of our office reasonably inclines us to loose sight of the author in commenting upon his works, thus much deserved praise is due to one whom we have always honoured as a distinguished fellow labourer in those branches of medical science to which we have been long devoted. But we must make exception to the apparent effort to excite local feeling, displayed in the commencement of the lecture.

In a warm and enthusiastic appeal to the patriotism of his native state in favour of her own medical institutions, Dr. G. remarks,

"It is time the people of the south should awaken from their lethargy, and reflect upon their true interests. The period has arrived, when it becomes them to consider dispassionately, if others have not fattened upon their substance, while they have laughed in secret at their follies; and if the millions they have caused to flow into northern coffers, could not have been more appropriately and profitably expended at home. I trust that sectional prejudice will never find a lurking place in my bosom," &c.—p. 9.

We will not say that the earlier part of this passage contradicts the latter, for the sectional feeling apparently displayed in the first pages of the pamphlet may have been the result of an undue attention to the effect of mere style, but candour demands the remark that the whole tenor of these pages, acting upon the enthusiasm of an excitable people, at the most enthusiastic age, rendered more excitable at this moment by the current of political events, is calculated to do injury to the cause of science, by leading to imaginary geographical divisions in the great republic of letters. "The rigours of a northern winter—often fatal in its influence!" "a stern reliance upon our own resources!" "rally round southern institutions!" "servile dependence on the north!" &c.—And who has ever taxed the south with lack of genius, or the neglect of its cultivation? What northern man has ever attributed the superior encouragement of northern schools to aught else than superior density of population, more extensive charities, larger libraries, and the consequent expansion of the scientific circle? What say the bills of mortality to the fatal influence of a northern winter? and what American has been taxed with servile dependence upon foreign countries, when seeking medical instruction in the great capitals of Europe?

As an outline of the natural divisions and extent of the science of medicine, the lecture of Dr. Geddings is calculated to effect a useful purpose:—as an outpouring of patriotic and the best of social affections, it is beautiful: and the lecturer needs no appeal to local feelings in defence of merits which are, and will continue to be universally acknowledged. Science owns no political boundaries, and the motto of every student should be—*Ubi Scientia ibi Patria.*

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *On the Structure of the Retina in Man, and the Mammalia generally.* By Dr. C. M. Gottsche, of Altona.—About two years and a half since, Dr. Gottsche made, in Copenhagen, the interesting discovery that a distinct nervous radiation might be seen in the retina of the calf; and, after having shown, by repeated examination in different individuals of the vertebrate classes, that the appearance was constant, it was lastly sought for in the human eye, and discovered.

Authors generally describe that part of the retina which they conceive to be the expansion of the optic nerve as a *medullary expansion*, but the filamentous structure in man is denied by all. Such is the account, at least, given by Meckel, Burdach, Hildebrandt, Weber, &c. Amongst the mammalia, Arnold has found the fibrillæ in the hare and pig alone, but denies their existence in the calf, &c. This description of the distribution of the optic nerve would make it an exception to what is considered an essential characteristic of the termination of the other nerves of the senses. It is not practicable, in the fresh eyes of mammalia, to show this filamentous structure by simple dissection; therefore, Dr. Gottsche had recourse to the assistance afforded by chemical reagents; and the chief secret consisted in softening and removing the compact layer which lay beneath the nervous fasciculi. Naceration appeared to be a means adapted to effect this, but by it the fibrillæ are only preserved immediately around the circumference of the optic nerve, or at best as far as the middle of the retina. Subsequently, solutions of carbonate and nitrate of potassa were employed; but nothing appeared to answer the purpose so well as a solution of one part of corrosive sublimate in three parts of sulphuric æther. After a sufficient maceration, ten minutes' manipulation with a camel-hair pencil and the above solution are sufficient to produce a most perfect and beautiful preparation of the radiation of the ultimate filaments of the optic nerve.

An eye being procured, as fresh as may be, all the external tunics, including the choroid, are removed; a narrow rim of sclerotic immediately surrounding the optic nerve being alone left. The retina is now loosened from the hyaloid membrane, and spread out with its *inner* surface upon a piece of black paper, or, which is better, upon a piece of glass painted black on one side: it will be found necessary to snip the retina at one part of its circumference, in order that it may lie smooth and flat. If the eye be that of a recently killed animal, it is advantageous to macerate the retina, thus prepared, for a time in water. The period of maceration must be decided by the temperature of the weather, and varies from one day to eight: the requisite amount of softening may be ascertained by

means of a camel-hair pencil. As soon as the compact layer above mentioned can be wiped away in small fragments from around the optic nerve, the preparation may then be proceeded with. The retina being now spread out so as to lie perfectly smooth, a few drops of the sublimate solution are allowed to spread themselves over its surface, which is at the same time gently brushed with the pencil: by a repetition of this process, the compact layer yields, and the small flakes are washed away by dropping water or alcohol on the surface. If the preparation be now macerated in spirit for a week, and again cleansed, it is fitted for microscopical examination.

If a fresh eye be treated in the above manner, it is rendered unfit for the desired object by the hardening of the dense layer already spoken of, and the increased firmness of connexion between it and the nervous fibrils.—*B. and F. Med. Review*, Oct., 1837, from *Pfaff's Practische und Kritische Mittheilungen, &c.* Heft xxxiv., 1836.

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2. *Quadruple Mammæ in the human subject.*—One of the best examples of this on record, has recently been communicated to the Royal Medical and Chirurgical Society. The individual in whom the above mentioned peculiarity presented itself was 35 years of age, and was prematurely delivered of a still-born child on the 21st of July, 1835. The mammæ having afterwards become excessively painful and distended, she was compelled most reluctantly to permit the author to make an examination of them, by which it was discovered that she had two mammæ and two nipples on each side. The inferior or pectoral mammæ were fully developed, and in the natural situation; and their nipples, areolæ, and glands, presented nothing unusual in their appearance. Near the anterior margin of the axilla, a little higher up on each side, was situated another mammæ, about one-sixth the size of the others. The nipples of these were small and flat, but when gently pressed a milky fluid flowed copiously and readily from several ducts which opened upon their extremities. When milk was drawn from the lower breasts, a small quantity usually escaped from the nipples of the upper; and when the draught came into the former, the latter invariably became hard and distended. From the flatness of the nipples of the upper breasts the patient had never been able to suckle with them.—*Lond. Med. Gaz.*, January, 1838.

GENERAL ANATOMY AND PHYSIOLOGY.

3. *Impregnation whilst the uterine orifice was completely filled by a polypus.*—Dr. Hanck records in *Caspar's Wochenschrift für die Gesammte Heilkunde*, a case in which this phenomenon occurred. The subject of it was the mother of six children, who, when seen by Dr. Hanck, had been labouring for six weeks under profuse uterine hemorrhage. On examination a polypus was found occupying the neck of the uterus, which was removed at the commencement of the year 1836, by ligature. A few weeks afterwards another polypus was discovered in the uterine orifice, which, by the month of May, was as large as an apple, and its pedicle the size of a thumb. The hemorrhage became so profuse that it was necessary to apply a ligature to this polypus, which detached it in five days. The sixth day a third polypus, the size of a nut, was found occupying the uterine orifice. This increased rapidly in size; but as the hemorrhage was not profuse, and the patient's health was bad, she was ordered to a watering-place, where she remained six weeks. On her return the polypus was found to be as large as an apple. As the hemorrhage was not then profuse, a ligature was not applied until two weeks subsequently. Some weeks previously the patient, judging from her feelings, believed herself to be pregnant; but as the hemorrhage was constant, and the polypus occupied the orifice of the uterus, her physician supposed her to be mistaken. Eight days, however, after the last ligature had been applied, she was seized with profuse hemorrhage, faintness, &c. and a male embryo, with its envelopes, of nearly ten weeks, was expelled.—*Gaz. Méd. de Paris*, June 10, 1837.

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4. *On Porosity and Imbibition.* By Magendie. (Extracted from his lectures on the physical phenomena of life.)—One of the greatest mistakes in medicine is

to suppose that every living being, animal or vegetable, obeys laws independent of those which govern other bodies in nature. This is so gross an error, that it is really unworthy of serious refutation. And, nevertheless, how many honourable, and otherwise well-informed practitioners, still maintain that there is nothing in common in the studies of medicine and the physical laws! In the course which has just terminated, we passed in review the principal vital phenomena which take place in the human body, but we could do no more than confirm the facts by means of experiments, for I confess my entire ignorance of their explanation. If I know by what mechanism a liquid is imbibed by a membrane, I seek in vain for the reason why muscular fibre contracts, or nerves are sensible.

You have seen that all our tissues are possessed of the general properties of matter, for they are extensible, impenetrable, divisible; and it is even from living bodies that the student of physics derives proofs that matter is divisible to infinity. What are the odorous traces which game leaves behind it, and which the nose of the dog so easily recognises? They are material particles which have escaped from the pursued animal.

We shall speak of the physical properties of living bodies, and first of porosity and imbibition.

Porosity consists in the existence of minute spaces, placed in the parenchyma itself of bodies. It may be stated, as a general rule, that this property belongs to all bodies in nature, or at least to mostly all, for there are some so disposed that we can hardly demonstrate that they are porous. It is from this porosity that a liquid passes through a filter, that a body placed in water swells, and then returns to its former state when exposed to the air; for this return can hardly be conceived, without the existence of small intervals destined for the passage of the fluid. My aim is not to explain at present porosity in a physical point of view, but to show you that it exists in animal tissues, and in living bodies.

Bichat, along with the physiologists of his time, imagined that the phenomena of porosity, or rather imbibition, ought not to take place in living bodies; for, according to his ideas, the vital powers maintain a constant struggle against the physical laws, whose efforts they are always enabled to surmount as long as life exists. This doctrine is very similar to that of the ancients as to the combat between what they called the great and the little world. Unfortunately, all this array of vital forces, constantly struggling against the general laws of nature, falls before the most simple experiments. Place a liquid in contact with any surface whatever of a living body; it is imbibed by the tissue, and much better even than it would do after death. You see how strong these facts are, since entire medical doctrines have been based upon similar errors. Bichat said, "A serous membrane is an absorbing surface, but a *vital* absorbing surface; it can choose between the good and bad, can admit what is beneficial to the economy, and reject what is hurtful." If, trusting to similar principles, you apply them in practice, and when any virus—the rabid virus, for instance—is placed in contact with an absorbing surface, you consider yourself dispensed from making any exertion, trusting to the intelligence of the minute mouth of absorbents, your patient will run great risk of perishing from hydrophobia. If the poisoned arrow of a savage penetrate into your tissues, would you say in all security, "O! the absorbing orifices have too much tact to open the door to deleterious agents?" Errors of this nature are too palpable to be commented on; it is sufficient to mention them.

Experiment will show us that these living membranes, of which the vital powers have been so much vaunted, absorb simply and plainly like an inert membrane. When I place on this sheet of paper a drop of a solution of iodine in water, you observe what takes place: the colouring matter remains in the centre, while the liquid leaves it, and extends to the circumference. Let us now suppose that a man has received a violent contusion of the arm, that blood is effused, and that an ecchymosis is produced on a limited part of the limb. What do you observe the day after the accident? The contused part is black; the integuments around are of a yellowish hue, which may extend to the shoulder and the fore-arm. If you remember the phenomena of imbibition on this sheet of paper, you have the natural explanation of all that takes place in the arm of the man. In effect, the dark part of the blood remains in the part where it has been effused, and the serum charged with the yellow colouring matter, becomes infiltrated in the tissues around. What is there vital, I ask you, in this phenomena? You cannot say that it is the

absorbents which have transported the colouring matter, for, imbibition having equally taken place below the contused part, a retrograde action would thus be conferred on them.

Let us prove by experiment, that the absorption of liquids, whatever their nature may be, takes place at the surface of living tissues.

You see we inject into the abdominal cavity of this rabbit an aqueous solution of the ioduretted iodide of potassium. Let us wait an instant, so as to give time for the liquid to be imbibed; but you must remember that, if you wait too long, you will not be able to find it, for it will have already passed into the circulation. The abdomen of the animal being opened, you will perceive the serous tunic of the intestines penetrated by the injection, for the coloured liquid has passed by imbibition through the walls of the vessels. If I put a few drops of the same liquid on the stomach, which is possessed of all its life, you see the phenomenon of imbibition take place under your eyes by an identical mechanism. This power, by which a liquid becomes insinuated into the pores of a body, is sometimes so energetic as to overcome the most powerful resistance. Thus, a wooden wedge placed in a block of stone will tear it asunder by the water which it may imbibe.

I now inject a few drops of a tincture of nux vomica into the pleura of a rabbit. You perceive that the poison has barely touched the serous membrane before the animal is affected with tetanus, and falls dead. Why have the intelligent orifices of Bichat given passage to a liquor so irritating as alcohol, charged with so venomous a substance as nux vomica?

If I now sink into the thigh of another rabbit a small arrow, having its point covered with a little of the alcoholic extract of nux vomica (and this substance must not be too soft, for it would thus be wiped off in entering the tissues,) the animal seems at first to feel nothing. Why did death occur instantly in the preceding case, while in this it approaches more slowly? It is because in absorption there are two distinct phenomena: 1st, the local introduction of the liquid by imbibition, and 2nd, the transport of this liquid into the torrent of the circulation. A poisonous and solid substance is placed in the thigh; it is necessary, in order that it may be absorbed, that it be moistened, and pass into the liquid state. In the pleura are united all the most favourable conditions for absorption, for you have there a great extent of surface, and a considerable number of vessels, while, in a muscle on the contrary, the circulation is much less active, and the vessels much less numerous.

Five minutes have now elapsed since we introduced the arrow. The animal now begins to be uneasy, and its limbs are agitated by a characteristic trembling. Well, it only remains with me to prevent it from perishing. You have seen that I have no sooner grasped the limb firmly with my hand, above the wound, than the symptoms of poisoning were suspended, and the animal is now tranquil. What has occurred? Have I prevented imbibition from taking place? No, I might attempt this in vain; but, by intercepting the circulation, I prevented the venous blood, charged with the deleterious substance, from returning to the nervous centres. Why should this not be practised in man, as well as the inferior animals? From time immemorial it has been known, that, by applying a ligature to the wounded limb, the effects of a viper's bite were prevented. What empiricism has taught, physiology explains. I now loosen my grasp on the limb of the animal, and you see he dies immediately.

These, then, are physical phenomena, whose theory we understand, and which we can modify at pleasure. If our tissues were not porous, if they were not permeable to liquids, and possessed of the faculty of imbibition, nothing similar to what you have just witnessed would have happened. You see what immense advantages medicine may derive from a precise knowledge of the nature of the phenomena which take place in the human body. The whole theory of the absorption of liquid aliments, of drinks, of drugs, &c., by whatever means they are made to enter, rests on the phenomena of imbibition, and is only the necessary consequence of this. I inoculated a dog, by placing under the epidermis an atom of the saliva of a man affected with hydrophobia, and at the end of 40 days the animal was mad, and furnished, himself, ounces of liquid, any atom of which was capable of transmitting the disease to any other living being. In these inoculations are there any other phenomena than those of imbibition?

The experimental analysis of the physical phenomena of life, is the most im-

portant, the most useful, and the most brilliant part of medicine: without this you may become a skilful empiric, but never a learned physician.

PATHOLOGICAL ANATOMY AND GENERAL PATHOLOGY.

5. *Vicarious Menstruation from the skin of the thorax.* Dr. Cowan relates in the *London Medical Gazette*, August 5, 1837, an example of this. The subject of it, aged 49, of industrious habits, and robust health, mother of five children, and never liable to uterine irregularity or leucorrhœa, about five years since, in consequence of fright during the menstrual period, experienced suddenly a suppression of the catamenia, which have never since returned. Her general health was not sensibly affected, but two months afterwards a sudden and copious discharge of blood, per anum, took place, from which she suffered no inconvenience. Two or three months later she was sensible for the first time of a pricking sensation on the under surface of the left mamma, which was soon followed by increased heat and redness, and a discharge of a thin serous, colourless fluid, similar in no other respect than as regards the smell, to the natural menstrual secretion. This continued for about twenty-four hours, when the surface gradually dried up, desquamation followed, and the skin in a few days resumed its natural appearance. With the cessation of the discharge of the breast first affected, a precisely similar series of phenomena took place in the corresponding point of the opposite side, and has continued up to the present moment, an interval of more than four years, to be repeated at the regular monthly period. She only complains of the local smarting and the disagreeable smell, which at times she states to be almost insupportable.

The affected part occupies a space about the size of the palm of the hand, and is situated in the fold of the skin between the breast and the thorax, extending equally upon both surfaces. There is an exact correspondence on either side, and during the period of secretion the skin has all the appearance of a raw and blistered surface; the nipple is tender, but has never been subject to any discharge.

She says that the local changes have not sensibly varied in character or extent from the commencement.

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6. *Hemorrhagic diathesis.* The following cases of this are recorded by Professor Kuhl of Leipsic.

Case I. *Hemorrhage from a wound.* A young man, of a pale, scrofulous, and weak temperament, wounded the skin of his thumb. The hemorrhage continued for several days, and was so obstinate as to occasion some degree of anxiety for the patient's life. In the following spring the skin of his forehead was cut by a tile which fell upon it. The greatest difficulty was again experienced in stopping the bleeding. Every sort of styptic, not excepting the actual cautery, was tried; but still, for several days, the wound began to bleed whenever the dressings were removed. A second and third application of the cautery were necessary at intervals of a few days, the one from the other. At length, the patient's strength being reduced to the utmost, the only security was found to be in keeping up continued pressure with the fingers. The assistants in the hospital were obliged to relieve each other at this duty for several days in succession.

Case II. *Spontaneous Hemorrhage from the Surface of the Legs.*—A youth, 16 years of age, and apparently healthy in constitution, was surprised one day at finding his left stocking soaked with blood, although he had received no cut or bruise of the leg. On taking off his stocking, he observed that the blood oozed out in drops from the skin of the knee, although there was no wound. This oozing continued, without any pain, for three days, and then ceased spontaneously. But in seven weeks from this time it returned, and Professor Kuhl examined the state of the patient with minute attention. He did not exhibit any signs of scurvy, and there was nothing which indicated a dissolved state of the blood. The blood which oozed from the skin of the knee was of a bright red colour, and therefore of arterial origin. Heat increased the flow of it, and cold diminished it. Various external and internal styptics were tried, but without decided effect. Dr. Kuhl lost sight of him soon afterwards.

The Professor alludes briefly to a third case, that of a young lady, who was annoyed for a length of time with an oozing of blood from the right caruncula lachrymalis; and also to that of a child, who was brought repeatedly to death's door by spontaneous epistaxis. Sometimes upwards of a pound of blood was lost in the course of a day.—*Med. Chirur. Rev.*, from *Beitrage Zur Pract. Heilkunde.*

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7. *Hepatic Abscess opening into right lung; matter discharged by expectoration.* —An example of this rare termination of hepatitis was recorded by Dr. Joseph Peace, in our number for November last, page 253; another is related by Dr. Kunde of Berlin, in a recent number of Casper's *Wochenschrift für die gesammte Heilkunde.*

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8. *Abscess of the Liver bursting spontaneously into the Thorax, and terminating successfully.* The *Calcutta Quarterly Journal* (No. 2, 1837,) contains the following interesting case, communicated by D. Stewart, M. D.—Mr. J. C. S. was seized on the 6th of August, in Canton, with inflammatory symptoms, for which he was leeched on the 10th or 12th, and bled from the arm on the 14th or 15th, and had this treatment afterwards followed up by a succession of leeching and blistering, and the administration of calomel every night, until the severity of the symptoms gave way. The disease was so far got under before his leaving Canton that he was considered out of danger by his medical attendants, and was recommended by them to go to Macao for the benefit of a purer atmosphere, where he arrived on the 1st of September, labouring under a relapse of all his former symptoms, but of an aggravated and more strongly marked character. He complained of much acute tenderness over the whole region of the liver, so much so as to be scarcely able to bear any degree of pressure of the hand upon any part of it. An attempt even to take a deep inspiration caused very severe pain in the right side. His respiration was short, quick, and attended with cough; tongue coated, mouth parched; quick and sharp pulse; anxiety of countenance, and great general prostration; symptoms clearly indicating that the inflammatory process had exceeded *the bounds* which admit of a termination of active disease by *resolution.*

The application of leeches to the seat of pain, which was had recourse to *repeatedly*, and carried as far each time as his reduced state would admit of, afforded only temporary relief. His bowels were carefully attended to and kept open by means of emollient clysters, with occasional small doses of calomel, and rhubarb, and castor-oil. Counter-irritation by means of blisters and the tartar emetic ointment was kept up; the nitro-muriatic bath was tried, and persevered in for some time, notwithstanding all which no decided benefit was produced.

The above treatment was pursued until the 13th, when a sudden change for the better, in the character of the symptoms, took place. He felt himself all at once relieved, and was sensible of something having given way within him. On examining his motions next day a very considerable quantity of purulent matter was discerned in them, and in those he passed for several days after, which sufficiently warranted the opinion that had been held, of an abscess having formed in the liver. For ten or twelve days after this he improved considerably, when another return of the symptoms took place. The same remedies were employed as before, together with anodyne fomentations, with the same want of success; he got daily worse, and serious apprehensions regarding his recovery were entertained, when, on the 4th of October, he experienced another sudden change for the better. But this abscess being higher situated in the organ than the former one burst into the *thorax* instead of the *colon*, and the matter was discharged by expectoration. Ever since he has continued to get better, and nothing further was required than a careful attention to the state of the bowels, keeping them open by mild aperients and emollient clysters, improving the strength generally by demulcent tonics and strictly regulated diet, and allaying nervous irritability and procuring sleep by means of night-draughts containing the acetate of morphia.

A few days ago he felt some uneasiness in the right side; the cupping-glasses were had recourse to, but as he could not endure them leeches were applied in their stead, and with a very good effect. He is now recovering rapidly.

9. *Tubulo-intestinal Fistula.*—M. G. E. Maslieurat Lagémard in the dissection of a woman of about forty or forty-five years of age, in the dissecting rooms of the *Ecole-pratique*, met with the following very singular pathological condition. There was a perforation of the large intestine at its sigmoid flexure, at which point the intestine adhered to the fallopian tube, and in this last there was also a corresponding perforation, through which fœcal matters passed into the cavity of the uterus, and were evacuated through the vagina. No account of the previous history of the patient could be obtained. The dissection is given in detail in the *Archives Générales* for December, 1836.

10. *Atrophy of the Parietes of the Uterus.*—M. Ripault reports a case in which he performed the cæsarean section, in which the parietes of the uterus were not thicker than the blade of a knife.—*Archives Générales* for November, 1836.

MATERIA MEDICA AND GENERAL THERAPEUTICS.

11. *On the employment of Opium in the Exanthemata.* By George G. Sigmond M. D.—(Extracted from a course of lectures on Materia Medica and Therapeutics, delivered at the Windmill street School of Medicine.) Opium, in the exanthemata, or those diseases which are attended with specific eruptions, which occur once only during life, is occasionally to be administered; for instance in the confluent small-pox, when salivation, the necessary evacuation, occurs, it is most advantageous, and in stages of debility; but, on the other hand, it should most scrupulously be avoided in the diarrhœa which succeeds measles, the proper cure of which is bleeding; and the same caution is to be evinced in the delirium that attends scarlet fever, and which sometimes precedes it. This delirium, unlike the delirium of fevers, is not to be considered an unfavourable symptom, nor should you allow it to weigh upon the minds of the friends of the patient; it must not be tampered with, and bleeding and blistering are, above all, prejudicial. In active hemorrhage, or fluxes of blood, whilst any fever is present, opium is not to be given; but in passive hemorrhages it is serviceable; in uterine hemorrhages it has the recommendation and authority of Burns, of Gooch, and of Hamilton, and very large quantities may be given at a dose. Mr. Stewart recommends and gives in his practice, in the *Medico-Chirurgical Transactions*, not less than 80 drops at a dose; it certainly is of the greatest value when much restlessness and irritation are present, you must, however, be aware of the fact, that not unfrequently, as a secondary effect, it produces retention of urine; you must also remember, that according to the urgency of the symptoms must be the largeness of the dose, and that once having given a certain quantity you must not diminish it, and, above all, you must not suddenly omit it altogether; these are practical points of great importance, and are to be gathered from the works of the authors I have just named, and from daily experience.—*Lancet.*

12. *On the employment of Opium in Dysentery.* By G. G. Sigmond, M. D.—In dysentery, as occurring in Great Britain, opium is most valuable, and here again I must refer you to Syndenham; and also in warmer climates it has met with its supporters—Lind, Wedelius, Bontius. At the same time there are not wanting men of ample experience who do not place any faith in its efficacy in this disease; amongst whom I may mention Pringle, Cleghorn, Blane, and Baker. A few gentle purges of castor oil, followed by laudanum, is the most general treatment pursued in this country; but care must be taken to give sufficient doses at proper intervals, and not, as Dr. Crumpe has observed, is too often the case, "to give an anodyne at night, which eases and composes the patient, and in the morning, when its efficacy is worn out, and the tortures of the complaint again return, in place of repeating what before proved effectual, to have recourse to some irritating purgative." Where the intestines have become ulcerated, opium may freely be given as a palliative. In the third volume of the *Medical and Physical Journal*, for 1800, appeared a letter addressed to John Pearson, from Mr. Hope, in which he speaks of opium combined with nitrous acid as a specific, for dysentery. He prescribes, with unvarying success, acid nit. ʒij; opii, gr. ij; aquæ puræ, ℥ij;

of which he recommends a teaspoonful two or three times a day, with any liquid. —*Ibid.*

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13. *On Opium in Tetanus, and some other Spasmodic Diseases.* By G. G. Sigmond, M. D.—In tetanus, opium has been administered in enormous doses, and it is generally acknowledged that more benefit has been the result of this than of any other remedy. In this disease opium has been given to the amount of a scruple every hour, and a drachm as a night dose; and there has been found in the stomach, upon examination after death, sufficient to have killed the patient if he had recovered from the disease. In an early volume of the *Medical and Physical Journal* Mr. Cole relates a successfully treated case of tetanus, in which he gave thirty grains of pure opium, which is equivalent to 600 drops of pure laudanum, in twenty-four hours. Mursinne, of Berlin, has treated this subject very well; he prefers giving the drug in small doses, placing his patient in a warm bath, which evidently increases the activity of the opiate, which he prefers employing in the liquid form, at repeated intervals, giving larger doses gradually. Mr. Jenkinson, of the *Manchester Infirmary*, Mr. Boutflower, of Salford, and Mr. Ward, Surgeon to the *Manchester Infirmary*, wrote very ably some time since on opiate frictions in tetanus; with this remedy they had been eminently successful. Mr. Ward's observations on the effects of opium, applied internally, are remarkably practical and judicious. In the early volumes of the periodical to which I have alluded, you will find a series of very useful dissertations by Mr. Ward, on the modus operandi of opium; they occupied a great deal of attention at the time they were published: the subject is, as I have elsewhere observed, very interesting, but very difficult of solution. Dupuytren has taught us to give, with decidedly good effect, opium in that species of delirium traumaticum which is so closely allied to delirium tremens, and which often follows very violent injuries. If the opium be suddenly discontinued, a relapse of the delirium, accompanied with most extraordinary depression, is the result. I must refer you to a very interesting case, under the judicious management of Mr. Cæsar Hawkins, at *St. George's Hospital*, where, from fracture of the neck of the thigh-bone, delirium traumaticum occurred; it is narrated in the *Medico-Chirurgical Review* for February, 1829, and is well worthy your attentive perusal. In the greater number of the diseases which are classed under the head of spasmi, opium is very serviceable, but the effects are transitory, seldom terminating in cure; it is, therefore, employed only as a palliative. Thus, in chorea it affords temporary relief but as more active remedial agents are known to us it is rarely employed. Opiate frictions in spasmodic diseases are frequently of most decided use; a drachm of finely powdered opium, with a pound of axunge, or half an ounce of tincture of opium with the yolk of an egg, or with two drachms of oil, or with soap liniment will be found most serviceable.

In Duncan's *Annals of Medicine* will be found a translation of Dr. Chiarige's practice in tetanus, in hydrophobia, in epilepsy, and likewise in paroxysms of the most furious mania, and in diabetes. Many cases are recorded of similar success by many British practitioners in various of these diseases. Opium, in true spasmodic colic, is a judicious remedy. Where this disease, however, is combined with inflammation, it is hurtful. A few drops of laudanum (from fifteen to thirty) in castor oil, in the earlier stage, will act as a charm; and also in that sudden and excruciating colic which results from the taking of cold drinks, or ice, whilst the system is heated; and in this case a large dose is absolutely necessary.—*Ibid.*

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14. *On Opium in Epilepsy.* By G. G. Sigmond, M. D.—In epilepsy, where n[o] plethora exists, and where pain occurs, opium may prove serviceable; still w[e] have not many cases on record which have been thus cured. Dr. Darwin tell[s] us, that in two cases in which it occurred during sleep, a grain of the drug give[n] at bed-time for some months removed the disease. De Haen relates, also, a cas[e] in which epilepsy, occurring during the night in a boy of six years of age, wa[s] cured by commencing with small doses, and gradually increasing it. Duchesn[e] called opium a specific, but it has not obtained that character generally; indee[d] it has been rather the subject of theoretical reasoning in this complaint than o[f] practical experiment. Its external application has been of service. Portal at[-]tended a young lady who was daily attacked by very severe epileptic fits; the

commenced in one of her toes, and he entertained an idea of cutting the nerve, with a view of interrupting the communication; but he determined previously to try the application of opium, and he succeeded in effecting a complete cure.—*Ibid.*

15. *On Opium in Diabetes.* By G. G. Sigmond, M. D.—In that singular disease, diabetes, where the functions of the kidneys seem completely changed, and where the solids seem decomposed, and a morbid secretion is formed, Dr. Rollo's plan of animal diet is not always to be carried into effect, from various causes, and in such cases opium and cinchona are most serviceable, and they generally, too, assist where the patient can be confined to animal diet. This singular, and sometimes obstinate disease, has yielded to the administration of opium, long persevered in.—*Ibid.*

16. *On Opium in lues Venerea.* By G. G. Sigmond, M. D.—Opium is of very considerable service in combination with the different preparations of mercury in the cure of lues venerea; it has, certainly, no specific effect, nor is there any additional efficiency given to the mercury, but it has the power of diminishing the sensibility of the stomach and bowels, and it prevents many of those inconveniences which are apt to attend upon the administration of mercury, and it also facilitates the introduction of the mineral into the system. It removes likewise the morbid irritability often produced by mercury, and is useful where venereal sores are painful, and seem disposed to spread. Opium, as John Pearson has observed, may rather be said to assist the constitution of the patient than to communicate any additional virtue to the mineral specific; and hence he will be better enabled to bear the quantity that may be necessary to effect the cure. The good effects of mercury are sometimes lost by the supervention of diarrhœa, of vomiting, or of dysentery; but opium has the power of correcting those morbid changes.—*Ibid.*

17. *On Opium in Maniacal Affections.* By G. G. Sigmond, M. D.—In maniacal affections, and in melancholia, opium has been given by some practitioners in very large doses, and occasionally with good effect; it must, however, be considered as rather a doubtful remedy. Bernard Heute first gave a very favourable account of the effects of opium in large doses; it is to be found in Wepfer's *Historia Apoplecticorum.* Dr. Ferriar was induced to try it, and gave in one case a quantity of an anodyne solution equal to sixteen grains of solid opium, in the day; the patient was not benefitted. He tried it in other cases, with similar results; in combination, however, with bark and aromatics, where the appearances resembled those of the low delirium in fevers, he was eminently successful. Pinel greatly approves of Dr. Ferriar's method of combining the use of bark and opium in cases of melancholia with great atony and depression, as well as in accidental idiotism consequent upon a too active treatment of mania. Dr. Laughter, physician to the Lunatic Asylum at Vienna, who tried many remedies, administers opium at bed-time as a soporific, and seems to think the general health much improved by its use.—*Ibid.*

18. *Opium in diseases of the Urinary Organs.* By G. G. Sigmond, M. D.—Probably no part of the human system is more alive to painful sensations than the organs which are subservient to the urinary secretion, and to the faculty of generation. Although the kidneys are not endowed with very acute sensibility, the assistant organs and tissues have an extraordinary degree of feeling, and they likewise sympathise with other organs and tissues. Opium, in the various states of disease to which these parts are liable, is of inestimable value, for it is very quickly conveyed to them, and very speedily communicates to them its anodyne virtues. Physiologists looked to the channel by which fluids are rapidly carried to the kidneys, with the same anxiety and ardour, and the same disappointment, that in our days navigators have looked for the north-west passage; but it is now ascertained that the blood is transmitted to these organs in a very short space of time, and that not less than one-eighth of the whole mass is directed to them. Richerand observes, that 1000 ounces of blood pass through the renal tissue in an hour. Supposing that this fluid contains only one-tenth of the materials fit for supplying urine, a hundred ounces, or seven pounds and a quarter, might be

given out in the hour, and never, with the most copious diuretic drinks, does more of it pass within that time. Probably there is no part of the wondrous system of man that excites more astonishment from its simplicity and its extraordinary utility in the economy of life, than the urinary apparatus; the blood seems to give up to the kidneys every ingredient that might too much stimulate the brain and nervous system; they act as excretory organs, carefully watching over the circulating fluid, abstracting that which is deleterious, and filtering at the same time with great nicety the watery fluid which they have taken up, lest it might prove hurtful to the other parts of the apparatus connected with them; yet, notwithstanding all the precautions, deleterious ingredients are received by them, causing considerable excitement in the whole system. These ingredients occasionally cohere, and form small masses; they remain in the kidneys, or are transmitted by the ureters to the bladder, where they become sources of pain and suffering, and occasionally require the knife of the well-skilled surgeon to make such an incision through the integuments, and the bladder itself, that he may be enabled to grasp the extraneous substance, extract it, and by this formidable operation restore to its former state that organ. In all the varied stages of the disease, opium is of infinite importance, and so is a knowledge of the time, and circumstances under which it is to be given.—*Ibid.*

19. *On the use of Opium in Surgical Practice.* By G. G. Sigmond, M. D.—It has been said that surgeons have not a sufficient reliance upon the powers of opium, and that their works are singularly deficient in cases in which that drug has been employed; and, certainly, on looking over the volumes of our earlier French and English authors, we find very little notice taken of its effects. The celebrated Le Dran hardly mentions it, and Ambrose Paré seems seldom to have had recourse to it; Richard Wiseman, the sergeant-surgeon to Charles the Second, whose works would have adorned the present high and palmy state of surgery, says but little; his principal observation is, "You ought to be speedy in mitigating pain, for nothing dispiriteth your patient more, nor maketh more disturbance in wounds, the humours flowing abundantly to the pained part, whence ensueth great inflammation and humour, wherefore you must hasten to succour it by anodynes;" still, he only prescribes fomentations and cataplasms of hyoscyamus, and of mallow. Pott only mentions opium twice, once when speaking of its efficacy in retentions of urine of a spasmodic character, and again in his much valued essay upon the cure of mortification occurring in the toes; more modern authors are also equally silent upon its uses; there are, however, in the periodical journals devoted to medicine, which have been so long an ornament to our literature, many very interesting papers, and narrations of cases, which, if collected, would form a most important addition to our stock of knowledge. There has been a question agitated, whether opium should not be administered previous to any great surgical operation, for the purpose of lulling the suffering, and diminishing the excitement of the nervous system. Most of our English surgeons prefer preparing the patient by attention to diet, by a due regulation of all the secretions, and have a strong objection to the employment of opium, fearing a fever may supervene, or that the bowels would not perform their proper functions. Doubtless some individuals, unknown to their medical friend, have recourse to opium, and I have heard of two instances in which the bad symptoms that arose from amputation under favourable circumstances, were ascribed to this cause. Although I have made many inquiries from some of our first and most experienced surgeons, I find that they have never countenanced its administration. It appears that opium decidedly quiets the sufferer, stupifies him, and that he makes little or no exclamation during the operation, and this so far from being considered as a favourable circumstance, is one that betokens the greatest danger. To give expression to great agony, and to employ muscular action during pain, is of much greater importance to the recovery of a patient than you would at the first glance be led to imagine. Pain is always much alleviated by any violent action of the muscles, hence it is that you observe during parturition a woman grasp with the greatest energy any object which gives resistance to her muscles; it is in consequence of this, that during any intense agony individuals compress their lips, and their teeth, and also bite any substance; this gives rise to the figurative language of the Orientals,—"there shall be weeping and wailing

and gnashing of teeth." Screaming and exclamation, however distressing and sometimes harassing to the operator, affords much greater relief than would any narcotic, which would suppress those outpourings of nature, and give rise to fever. It is as necessary that the body should have its means of expression of grief, as it is that the mind should relieve itself from its sorrows by words, which, if it do not give vent to, becomes overpowered. Of this state Shakspeare, with his characteristic knowledge of man, and of the feelings which agitate him, gives us a delineation in his description of the state of Macduff, who stands stupified on hearing that his wife and children have been savagely butchered, upon which his friend says,—

> "What! man? never pull your hat upon your brows;
> Give sorrow words; the grief that does not speak,
> Whispers the o'erfraught heart, and bids it break."

To stifle the expression of pain under operations, has, therefore, been avoided. Baron Percy, who has been said to have performed as many great operations as any surgeon known to us, has observed that it is a favourable circumstance when the patient cries and shed tears. The Baron Larrey has written upon the language of complaint during pain, and the consequence of suppressing it; and you may consult a very well-written essay upon the subject in the second volume of the quarterly series of the *Medico-Chirurgical Review.* Baron Larrey says he has known men who, in the midst of the most terrible suffering, knew not how to cry out, or who could not; they appeared as if stupified, or absorbed by the pain. He has exhorted them, under such circumstances, to cry out, when he saw their necks and chests swell, the hair bristle on their heads, the mouth closed and distorted, all their muscles contracted, the face pale and sunk, the eye fixed and projected, the countenance wild, a hollow stertorous sound issuing from the bottom of the throat, and yet suffering nature giving no vent to her feelings. Some individuals who express little, actually fall victims to the suffering, not to the operation. M. Biot gives us an instance of this kind. He extirpated a large cancer from the breast of a female, who experienced such excruciating pain during the first incision, and the whole of the body was thrown into such a state of rigid contraction, that it required six men to hold her. The surgeon was obliged to stop the operation for two minutes, till the spasmodic action ceased. She then appeared as though she had lost all her energy. She made no complaint during the sequel of the operation. The tumour removed, no hemorrhage succeeded. She was placed in bed, dressing was applied, and she appeared indifferent about every thing, except repose, which she much wished for. She died in a few hours.

Baron Larrey extirpated the breast of a lady affected with cancer, who was of a most religious turn of mind. She held a crucifix in her hand, smiling and talking in the most tranquil and quiet manner during the whole of the operation, while her body was contorted with agony. She was seized immediately afterwards with a universal spasmodic affection, which nearly put an end to her existence. The Marechal de Muy was operated on for stone in the bladder; he prayed devoutly at mass just before the operation, for strength of mind to bear the pain, and he so far suppressed the feelings of nature, that he uttered not a murmur whilst the stone was extracted. He died immediately after.—*Ibid.*

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20. *On the administration of Opiates to Children.* By G. G. Sigmond, M. D.—Many individuals who have devoted themselves to the treatment of the diseases of infancy and of childhood most strongly object to the use of opiates. The principal writers on this subject are Dr. Armstrong, Dr. Hamilton, Dr. Underwood, Dr. Harris, Dr. Burns, Dr. Clarke, and Mr. North; you will find them, generally speaking, inculcating the greatest caution in the employment of opium, and pointing out the great necessity of care and watchfulness. Very minute doses of the tincture of opium have proved fatal to infants. Dr. Alison, an authority of the highest value, has met with a case in which an infant, a few weeks old, died, with all the symptoms of poisoning by opium, after receiving four drops of laudanum; and he has repeatedly seen unpleasantly deep sleep produced by two drops only. Dr. Christison tells us, "that an infant, three days old, got, by mistake, about the fourth part of a mixture, containing ten drops of laudanum; no medical

man was called for eleven hours; at that time there was great somnolence and feebleness, but the child could be roused; the breathing being very slow, artificial respiration was resorted to, but without advantage; the child died in 24 hours, the character of the symptoms remaining unchanged to the last." Three drops of laudanum, in chalk mixture, administered for a diarrhœa, to a stout child, fourteen months old, has caused death.

Dr. Clarke observes, "that opium has been exhibited in the forms of laudanum, syrup of white poppies, or under some empirical title, as 'Godfrey's Cordial,' or 'Dalby's Carminative.' These medicines have been ignorantly and indiscriminately given, in some instances under the sanction of medical men, either because they did not themselves know what to do, or to fall in with the desires or prejudices of parents and friends; but the administration of this class of medicines requires the greatest skill in the physician." Nothing is more uncertain than the effects of opium on young subjects, and it ought never to be employed even by medical men, except with the greatest caution, as it sometimes acts with much violence, and has proved deleterious in very small doses: half a drachm of genuine syrup of poppies, and in some instances a few drops of "Dalby's Carminative," have proved fatal in the course of a very few hours to very young children. You will find in a volume very properly designated *Practical Observations on the Convulsions of Infants*, by Mr. North, some very sensible observations upon the administration of sedatives to children; and he very justly observes, "That we are not to deprive ourselves of a powerful weapon, because, in the hands of the unskilful, it may have proved the means of destruction rather than of defence."

To manage the use of opium, or other medicines of the same class, adroitly, either in adults or in children, when it is our object to subdue nervous irritability, is by no means an easy task. There are not many of the diseases to which either infancy or childhood is subject in which you will find this drug at all necessary, and in by far the greater number it is altogether inadmissible; this most probably arises from the great predisposition that exists at that period to arterial acceleration, and to cerebral affection. The only circumstances which imperatively call for its administration are very severe bowel complaints, which can by no other means be controlled, and also those alarming convulsions which occur at this period, and which sometimes threaten immediately to terminate existence; in such instances the necessity for quick relief, and the urgency of the case may demand from us the having recourse to means which may themselves, under ordinary circumstances, be objectionable. We must then administer very minute doses, must take care that if any unfavourable symptoms arise we have the means of checking their progress. The best plan is to begin with a single minim of tincture of opium, and to drop this into at least four drachms of fluid, with one or two drops of the compound tincture of cardamom; the best fluid is peppermint-water; a little magnesia added to this is generally useful. Should any somnolence appear, the oil of peppermint, or aniseed, or the tincture of castor, or of assafœtida, or any of the diffusible stimuli, must be quickly given, and cold must be applied, which is occasionally more serviceable than any medicine, water being freely sprinkled over the head, neck, and face. No doubt many infants fall victims to the injudicious use of quack medicines, many of which, under the name of anodynes and soothing syrups, contain opium; nor is the practitioner, when called in, always informed of the medicines which have been employed.—*Ibid.*

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21. *On the administration of Opium per anum.* By G. G. Sigmond, M. D.—There are circumstances under which it becomes necessary to inject into the anus an opiate, or to use it as a suppository; sometimes the stomach will not bear it, at other times it is thus employed to alleviate the sufferings which arise during diseases of the prostate gland, of the uterus, or of the bladder; and it is necessary for you to bear in mind, that however great the benefit may often be, the practice is not unattended by danger, and that you must be cautious as to the quantity thus employed, and the state of your patient, for it is evident that occasionally the absorption into the system is very rapid, and that from some unexplained causes the action is increased. It is singular enough that in France, where enemas are in very general use, the prejudice is exceedingly strong

against those which contain opium; whether from the more frequent employment of them the rectum becomes more sensitive, as has been said, I know not, but certain it is that the drug is always considered to act with much greater energy, and is, therefore, administered in much smaller quantities, whilst in England medical men do not hesitate to employ twice the dose that would be given by the mouth. I mentioned to you, on a former occasion, that so small a quantity as 12 drops injected into the rectum has been the cause of death at a hospital in Paris. I cannot, however, but think that there must have been some mistake which has not been explained. Quarin, in his *Animadversiones Practicæ*, has stated that a single grain of opium, or 20 drops of laudanum, given in a glyster, produced an incipient paralysis of the lower limbs. Orfila has repeatedly injected, into the anus of dogs, a drachm of watery extract of opium, dissolved in an ounce of water; the results have been, in most instances, sopor and insensibility, but in other cases the animals only experienced vomitings and a slight paralysis of the lower limbs; and with regard to the use of suppositories formed of the drug, Marcellus Donatus has collected a large number of cases, some occurring in ancient authors, others in his own practice, and in that of his cotemporaries, where, by these means, life has been destroyed. One instance he mentions, in which it was thus made use of, the case of a lady of distinction, who had suffered from unconquerable wakefulness, she was thrown into a very deep sopor, which continued during a day and a night, and from which she was only aroused by the most active measures; but such was the effect produced upon her nervous system that she became an idiot, and remained so to the termination of her life. Donatus states that he himself witnessed the death of a boy into whom a suppository had been introduced in consequence of tenesmus; and Nicolaus describes a case perfectly similar, both as to the cause of death, and the disease for which the remedy was employed. Marcellus Donatus also narrates a case where a glyster, to which opium had been added for the cure of colic, caused a fatal termination.

All these circumstances it is necessary for you to know, that you may be at all times upon your guard; at the same time, with due caution, you will find opiate injections and suppositories very useful auxiliary means, and oftentimes very energetic remedies. Since Dupuytren employed them in France in delirium traumaticum, and published his opinion upon them, they have been somewhat more in vogue. You will find that some of our English practitioners of experience and judgment employ them very judiciously, and hence very fearlessly. Dr. Graves, who has contributed some very interesting cases to practical science, has furnished us with the result of some trials of injections of opium in which his treatment has been attended with success. Two cases that have been given to us by him were both of medical men, one of whom had chronic arthritic swellings, pains, extreme debility, and want of sleep, for which for upwards of two years he had been in the habit of taking an opiate, without which, in fact, he could not sleep; his dose had often been two ounces of "Battley's solution," the "Liquor opii sedativus." A starch enema, with one scruple of black drop, three times daily, with sarsaparilla, broth, three drops of Fowler's solution, the liquor potassæ arsenatis of the present pharmacopœia, the liquor arsenicalis of the old, and two drachms of the liquor sedativus, at night, was attended with the best effect.

The other case was one of neuralgia, which was effectually alleviated by the injection of a drachm of laudanum, two or three times daily, instead of the patient following the practice, to which she had been obliged to have recourse, of taking a hundred grains during the paroxysm, the effect of which large dose, so habitually taken, had been to disturb the secretions, destroy the appetite, and impair the intellectual powers; these bad consequences were avoided by the employment of injections. It is unnecessary for me to dwell upon this subject: but I will observe that the same doses as are given, under ordinary circumstances, of the different preparations of opium, may, without hesitation, be injected, and that no blame can attach to the practitioner who may use twice the quantity as an enema that he would introduce into the stomach, should any untoward symptom occur.—*Ibid.*

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22. *On the injection of opium into the veins.* By G. G. Sigmond, M. D.—Opium is very powerful in its action when injected into the veins; it does not always produce fatal effects, and it is a remedy only to be tried in desperate cases, such as

hydrophobia, or tetanus. In the *Revue Médicale* for July, 1823, are some observations by Coindet, which would lead to the conclusion, that in diseases in which, from various states of the digestive function, medicines would not act upon the system, their injection into the veins may prove very important. He relates the case of a young girl, 14 years of age, who laboured under hysteria, produced by fright. Whilst sitting at dinner she was seized with rigid locking of the jaws, and in a few minutes became insensible. In two or three days the spasms extended from head to foot, and had the appearance of real tetanus; insensibility still continued; the disease gradually ceased in about three weeks, but it returned a short time afterwards with terrific power. The spasms were more violent than in idiopathic tetanus; they commenced very irregularly, in attacks of emprosthotonos, the head sometimes coming with violence against the knees; then followed opisthotonos; the body took the form of an arch, and rested on the head and occiput. These paroxysms sometimes lasted twenty minutes, during which the respiration became embarrassed, and the pulsations of the heart feeble and irregular, and suffocation seemed to be likely to terminate life: there were intervals of tranquillity. As much as an ounce of laudanum had been administered uselessly, and it was determined to inject a solution of opium into the veins. A scruple was dissolved in distilled warm water, and in the presence of several medical men an opening was made into the vena basilica of the right arm, and the point of a fine syringe was introduced. A drachm was injected every five minutes, taking care not to allow any air to pass in. At the first injection the respiration became less rapid; at the second, more natural, perspiration gently broke out, the pulse rose, the spasms were less violent, she heaved some sighs, like a person awaking from sleep; at the third, the pulse rose, the convulsions ceased, she articulated some words indistinctly; at the fourth, sensibility appeared to return; at the fifth, she obtained her sight and hearing, and recognised the physician, and from that time recovered; but after some interval of complete health her disease returned, but not in so violent a degree, and she was, by proper attention, restored to health. The vein had some tendency to inflammation, and after the operation she complained of some sickness, and irregularity of breathing.—*Ibid.*

23. *On the endermic use of opium.* By G. G. Sigmond, M. D.—The introduction of opium into the system through the medium of the skin, is oftentimes a happy resource, when other means of producing its good effects fail. In the year 1834, I read, before the Medico-Botanical Society of London, a paper, which appeared in some of the periodical journals, on endermic medication, which I had found, when on the Continent, much pursued. I have since had opportunities of witnessing, in this country, its utility, under many circumstances, and more particularly where opium has been used. Cutaneous absorption, or imbibition, is produced either by the simple rubbing in, upon the skin, of medicinal substances, or by the application of a remedial agent to a surface deprived of the epidermis. To these two plans the name of "iatraleptic" and "endermic medication" have been given. The latter system has been much pursued. The epidermis must be removed by such means as will not produce any structural change in the subjacent tissue. Various are the means by which those parts are denuded which are to be exposed to the action of the remedial agent. The most common practice is to apply a blister of cantharides; others prefer liquid ammonia. Boiling water has been used, and also phosphorus, but they change the natural structure of the skin. The French produce an instantaneous blister by the following means: they cut a piece of cotton, of linen, or of paper, of the size and shape for which it may be required; they immerse this in spirits of wine, in strong brandy, or in eau de Cologne; they lay it on the surface to be blistered, wiping the edges, so that none of the fluid may moisten the surrounding parts; a lighted candle is applied rapidly over the whole surface, that it all may be burnt immediately; the ignition is exceedingly quick, and the cuticle will be found separable from the subjacent cutis. It is under the epidermis, which is to be cut with a pair of scissors, that the medicament is to be applied; if it be an insoluble substance, it is to be sprinkled on the denuded surface; if it be a fluid, it may be applied by moistening a small piece of lint with it.

In this way opium has been most serviceably employed in the cure of many diseases, and I have had ample opportunity of witnessing its good effects in some

most painful and distressing maladies. M. Lesieur, who published a treatise upon the "*Nouvelle Medication par la voie de la Peau,*" relates seventeen cases in which he tried the acetate of morphia, at the *Hôpital Cochin* and the *Bicêtre.* Of these, four were chronic catarrhal affections, which were soon cured by the application of the acetate of morphia to a blistered surface: half a grain, gradually increased to two grains, was introduced; this was continued for a month, and whenever the treatment was intermitted the symptoms returned again. Two cases of phthisis pulmonalis were relieved, but the dose was necessarily small. Pleurodynia, which resisted leeches, blisters, and other remedies, was thus relieved. A neuralgic affection of the temple was cured by the same means. A very interesting case occurred at *La Pitie*, in February 1826, the details of which are to be found in the July number of the *Medico-Chirurgical Review*, condensed from the *Archives Générales de Médecine.* It was one of those gastralgic affections which assimilate to gastritis of a chronic kind, attended with perpetual vomiting, and in which no internal remedy could be employed. Mr. Lembert applied half a grain of acetate of morphia to a blistered surface; in a few minutes the vomiting ceased, as if by magic, and the patient passed a better night than she had done for some time. On the next day the process was repeated, and the patient slept the whole of the day. The acetate of morphine was gradually increased, until at length food was retained and a cure effected. M. Bally, in the *Memoires de l'Academie Royale de la Médecine*, details its effects on rheumatisms, lumbago, and sciatica, and he states that three cases of tetanus were treated by these means with success;—one was traumatic, the second produced by strychnine, and the third by fright.

Mr. Magistel has made public the happy result of his employment of acetate of morphia in hemicrania, and Dr. Stokes, of Dublin, has successfully treated in the same way two cases of intermittent hemicrania. I have advantageously employed it in hemicrania, tic douloureux, in lumbago, and in sciatica, and consider that this mode of treatment will yet find its way into this country, although some obstacles may be supposed to exist to its universal reception. Not only upon a blistered surface does opium produce very striking effects, but also where the skin remains almost in its usual state, and imbibition takes place with a most extraordinary rapidity. In the *Journal de Chimie Médicale* is the case of a child two months old, who nearly died in consequence of a cerate containing 15 drops of laudanum having been kept for 24 hours on a slight excoriation, produced by a fold of the skin. When the cause of the illness was discovered, it had been for some hours almost insensible, with a slow, obscure pulse, and occasional convulsions. It also appears, from the following instance, that in certain diseased states of the integuments, its absorption may prove fatal:—A soldier affected with erysipelas of the leg, had a linseed poultice applied, which his surgeon ordered to be sprinkled with 15 drops of laudanum; next morning the patient was found in a state of deep sopor, and affected with convulsive twitches of the face and limbs, and in no long time he expired. His soporose state turned the surgeon's attention to the poultice, which he found coloured yellow, and smelling strongly of opium, and on removing it found that it was completely soaked with laudanum, which the attendant had carelessly poured on it, to the extent of an ounce. The patient died, notwithstanding all the remedies which his state called for, and the viscera were found quite healthy, but in many places the blood had a strong odour of opium.—*Ibid.*

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24. *On the different preparations of opium.* By G. G. Sigmond, M. D.—Different preparations of opium have been from the days of Sydenham in vogue, which have obtained the character of possessing all its virtues without any of the bad qualities that have been ascribed to it; and there are many prescriptions which are to be found in the old Pharmacopœias that are quite forgotten, such as the guttæ vitæ, which, in the days of Salmon, obtained great notoriety. The Pilulæ Matthæi, or "Matthew's Pills," the Pilulæ Starkæi, or "Starkey's Pills," were kept in the shops, and prescribed by the physician. In our time, the "Black Drop," or the "Lancaster," or "Quaker's Black Drop," and "Battley's Solution," or the "Liquor opii sedativus," although not officinal, have been very much employed, and are prescribed very frequently. "The Black Drop" was for some time a preparation not made known to the profession, but some documents having passed into the hands of Dr. Armstrong, he published the receipt, which is here

added:—"Take half a pound of opium sliced, three pints of good verjuice, (juice of the wild crab), and one and a half ounce of nutmegs, and half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonfuls of yest; set the whole in a warm place near the fire for six or eight weeks; then place it in the open air till it becomes a syrup; lastly, decant, filter, and bottle it up, adding a little sugar to each bottle." This opiate has been very highly extolled by many medical men; it is found to be very powerful, and to produce less excitement, a single drop being equivalent to three drops of the "Tincture of Opium" of the London Pharmacopœia.

"Battley's Solution" has maintained a very high character for its uniformity, and for the certainty of its operation. The first notice which I find of this preparation is the following announcement, in the year 1816, in the *Medico-Chirurgical Journal:*—"Mr. Battley, of Cripplegate, having decomposed opium, and laid its component parts before the College of Physicians, offers to the notice of the profession one of the parts in solution, under the name of liquor opii sedativus, as a sedative medicine of the greatest importance." From that time this preparation became a great favourite with professional men, but no steps were taken to ascertain the process pursued to form it, though many conjectures were hazarded, until the decomposition of opium excited so much attention, and it was generally known that to the presence of morphia this, and all other opiate arcana, owed their efficacy. * * * * * * * *

It is asserted, notwithstanding the excellence of Mr. Battley's liquor, that proof spirit is a superior solvent to water, for that it dissolves more than two-thirds of opium, whilst the latter only dissolves about three-sevenths; there, however, is little doubt that the activity of the liquor is much greater. At the same time it must be observed, that Mr. Battley adds some spirit, which prevents it undergoing a decomposition, to which it appears, from some observations of Dr. Paris, it is liable, and which, indeed, is not denied by the maker. I should be wanting in courtesy to Mr. Battley, if I did not here express my feelings on the kindness I have experienced from him, in his constantly permitting me to have access to his laboratory, and inviting me to be present on every occasion when he has had any process going forward, which he has thought might interest me; and I must bear witness to the liberality which has led him to throw open to every medical pupil his establishment, and to keep for the student's use an interesting cabinet of materia medica.

Dr. Porter's "black drop" is formed by uniting opium with citric acid. His formula consists of four ounces of opium, two ounces of the crystals of citric acid: Pound them well in a porcelain mortar, then add a pint of boiling distilled water, mix the whole well together, macerate for twenty-four hours, and finally filter.

The Abbé Rousseau's drops have a very great reputation on the Continent, and almost every practitioner in France has recourse to them. Seven drops of the liquid contain about one grain of opium. The recipe is as follows:—"Take of white honey twelve ounces, warm water three pints, dissolve the honey in the water, pour the mixture into a matrass, and place it in a very warm situation; when the fermentation commences, add four ounces of opium, previously dissolved in twelve ounces of water. Suffer the fermentation to continue for a month, in a temperature of 86°; then strain, filter the liquor, and evaporate it, until only ten ounces remain. Strain again, and add four ounces and a half of alcohol."

All these preparations are said to owe their power to morphia, the salts of which, the acetate and the hydrochlorate, are now admitted amongst the formulæ of our Pharmacopœia; morphia itself, in consequence of its very sparing solubility in water, not being administered alone. The acetate is to be made by taking "of morphia six drachms, of acetic acid three fluid drachms, of distilled water four ounces; mix the acid with the water, and pour them upon the morphia to saturation. Let the liquor evaporate with a gentle heat, that crystals may be formed." There is, on account of its extreme deliquescence, great difficulty in obtaining the salt in crystals, which are in soft silky needles. It is not to be prescribed in combination with potassa, with soda, or with ammonia, nor with most of the earthy or metallic salts. It is very soluble in water, less so in alcohol.

The acetate of morphia has been fairly tried, both in health and in disease. In the year 1829 a party was formed at Turin, for the purpose of ascertaining its effects upon people in health; it consisted of four gentlemen, who formed a sort of

committee of taste. Messrs. Beraude, Rebrini, Crispo, and Allenio assembled, and having previously dined, they began a series of experiments. Mr. Allenio, a gentleman of twenty-two years of age, took, at three o'clock, an eighth of a grain in distilled water; in five minutes there was severe pain in the epigastrium, propensity to sleep, and some difficulty of breathing; in thirty minutes there was profuse perspiration, the pupils were dilated, the pulse ninety-four; in thirty-three minutes drowsiness, pain about the frontal sinuses; in fifty minutes the lips were livid, the face flushed, pain severe in the frontal bone; in fifty-two minutes pain in the bladder, sense of lassitude in the extremities, thirst. At a quarter past four the genito-urinary organs were in pain; there was weight at the forehead; itching of the skin. These symptoms continued until nearly seven o'clock, when after considerable pain in the epigastric region, vomiting occurred. It was not until two o'clock on the following morning, that there was any sleep. He then fell into a profound repose, which lasted until six, when he awoke, with violent pain in the head. He had two evacuations from the bowels. Two who took the acetate were similarly acted upon. The other had only his pulse accelerated to 108 in the minute. Two days afterwards they went through a similar experiment on empty stomachs; there was no very striking difference. They again, on another occasion, tried its effects in larger doses, and the symptoms were nearly similar, but with greater intensity.

I observed to you, that the salts of morphia were not supposed by medical men to have the intoxicating effect of opium, but that there were some doubts on the subject. My highly-gifted friend, Dr. Copland, whose name carries with it the highest weight, tells me that he has known three cases in which the acetate of morphia has produced effects which he has every reason to believe are precisely similar to those which opium-eaters describe. In almost all the diseases in which opium has been employed, both the acetate and hydrochlorate have successfully been administered; the usual dose to commence with has been about the eighth of a grain. Dr. Bardsley, in his *Hospital Facts and Observations*, illustrative of the efficacy of the new remedies, has given us a series of most interesting cases, in some of which the acetate was productive of great relief, and in others in which it failed. Some of these were severe pains in the epigastric region, in the stomach, dyspepsia, pyrosis. He had likewise tried its palliative and remedial powers in uterine disease, and in neuralgia. He says, "It must be allowed that morphia has not always answered the intentions with which it has been employed, but the proportion of the favourable cases has been considerable, compared to those in which it has failed. I have never witnessed any pernicious consequences from a prudent use of the morphia. I am led to recommend the acetate of morphia in preference to opium, from a conviction that its efficacy may be equally relied upon, whilst its administration will be unattended by the distressing headache, excessive constipation, and other unpleasant symptoms, which the drug, in large doses, mostly induces." Dr. Stokes has employed the acetate of morphia, and has likewise given us cases in which he has found it serviceable. His clinical observations on the exhibition of opium in large doses, in certain forms of disease, are well worthy your attentive perusal.

Dr. Christison has been led to the conclusion that the hydrochlorate of morphia is a much superior preparation of opium to any other, in which the morphia is not reduced to the state of a simple pure salt. He has observed two circumstances which are attendant upon the action of hydrochlorate of morphia, which, should they be confirmed by future experience, cannot fail to give this preparation a great superiority over the other preparations of opium; the first is, that whilst its soporific effects appear on the one hand, more complete for some hours after its administration, so, on the other hand, they seem to pass off more suddenly and completely than those of laudanum, or Battley's solution. The second is, that the hydrochlorate of morphia, after being taken for days in succession, still continues to act with equal activity, without being increased in quantity. From this last conclusion my own experience teaches me to express some doubts as to the general correctness of these views, for I have uniformly found the necessity of increasing the dose of the salts of morphia, in order to obviate the loss of their power when given for any length of time. I must confess that my own practice still leads me to the administration of the tincture of opium, which I find prefera-

ble to all other preparations, and when that fails, I have recourse to the acetate of morphia.—*Ibid.*

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25. *On Hyoscyamus as a remedial agent, its effects and modes of employment.* By G. G. Sigmond, M. D.—Although there has been some discrepancy of opinion as to the medicinal effects of hyoscyamus, or henbane, upon the human frame, yet I am persuaded that you will have great occasion, in the course of the practice of your profession, to be satisfied with the value of it, as a most important instrument in the cure of disease, and that you will be led to acknowledge its utility. I have always found it a most serviceable narcotic, prescribed in the mode which I am about to explain; and I have learnt to place the firmest reliance upon its effects,—upon the certainty and celerity of its influence. Like all other medicines it demands our attentive examination, and when we are once satisfied by experience, we must fearlessly employ it, when called upon to relieve disease, whatever may be the opinions that others may have entertained of it. It is an agreeable anodyne; it may not so rapidly diminish pain as do some of the other narcotics. As a soporific, it is highly to be commended. The sleep that follows upon it, when judiciously administered, is not heavy; there is no stupor attending it; the repose seems that which nature, in her ordinary course, affords: it comes on gradually, rather stealing over the senses than suddenly overpowering them; it does not benumb them. Neither languor nor lassitude succeeds it; the refreshment seems complete, during its operation a gentle, warm perspiration not unfrequently bursts forth; the patient feels great tranquillity, experiences no excitement, no troublesome dream. It very rarely constipates the bowels, and occasionally, where they are overburthened, relieves them. It also has some slight influence on the urinary secretion, augmenting its quantity. Its stimulating power upon the nervous system is, comparatively speaking, very trifling, when the dose is not great. In almost all those diseases in which I have recommended you to have recourse to opium, you may occasionally substitute hyoscyamus, and even where the former drug has lost much of its potency from the constitution having become accustomed to its use, you will find the change to be of service, and that this plant will produce all its wonted effect.

It is principally to the Baron Stoerck that we owe our knowledge of this remedy; his experience has furnished us with some very material information on the subject, which has been of infinite value; and I think you will find, that although there are some sceptics upon the subject, amongst whom Cullen is to be ranked, it deserves the reputation which it gained at Vienna. Much must naturally depend upon the circumstances under which every article of the materia medica is employed, and I think that this remedy, both from the large doses which have been given, and from the inertness of the extract sold at some of the shops, has obtained less character among us than it deserves. Certainly the doses which Cullen gave of a well-prepared extract would have produced the mischief which he describes. He states that he seldom discovered its anodyne effects until he had proceeded to eight or ten grains, sometimes to fifteen or twenty; and both Messrs. Fouquier and Ratier have in their practice complained, that headache, delirium, nausea, vomiting, and feverishness have followed its use, and that its good effects have been exaggerated. There is no doubt that if either of the two preparations which are in our Pharmacopœias, the *tincture* and the *extract*, are given in too large quantities, very bad symptoms will supervene, and I am quite willing to acknowledge that the doses which are mentioned in our different works upon materia medica are very much larger than I ever prescribe. This arises from experience of the effects which are consequent upon various quantities employed. Neither of the preparations admit of being given indiscriminately or carelessly. Where they are properly prepared, they are powerful and energetic remedies; they contain all the medicinal and toxicological properties of the plant, and I have pointed out to you that it is a poison of very considerable intensity of action.

I place the greatest reliance upon the tincture, because it is much more uniform in strength, and does not vary so much in the shops as, I am sorry to say, I have found to be the case with the extract. The tincture is directed to be made of five ounces of the leaves of henbane, macerated in two pints of proof spirit for fourteen days; thus are obtained all the virtues which reside within the vegetable.

The extract is likewise made from the leaves; they are bruised in a stone mortar, a little water being sprinkled on them; the juice is then pressed out, and without any separation of the sediment; it is evaporated to a proper consistence. It may be considered as a fault in our Pharmacopœias that the degree of heat for the evaporation of the extract is not stated. Extracts are generally directed to be made by evaporation of the water, by a water bath, in a pan, as quickly as possible, towards the end constantly stirring it with a spatula; it is true that a water bath is described to be that by which any substance contained in a proper vessel is exposed either to hot water, or the vapour of boiling water; but this is too indefinite. The process of evaporation is differently followed by different druggists, sometimes in vessels heated by steam, at others in vessels at very low temperatures, exhausted of atmospheric air, and at other times spontaneous evaporation is preferred. I have seen extracts prepared in these various ways, and have not been able to perceive any difference as to taste, smell, or external appearance. You will find very great dissimilarity in the extracts of the shops, both as to the colour, the aroma, and also the strength. I have known it, even in a hospital, to be perfectly inert, and have been obliged to abandon its use, until I procured some on which I could rely, when the effect upon disease was very quickly perceptible. Of such an extract I have found three grains quite enough; of the other, any quantity almost might be given with impunity; and, therefore, I am not surprised that Collier gave from twenty to twenty-five or thirty grains a-day.

My much esteemed friend Mr. Judd, who is in the habit of administering the extract of hyoscyamus in his extensive field of practice, related to me that which had occurred to himself in consequence of taking more than his ordinary dose, to which he occasionally has recourse for disturbed stomach. On retiring to rest at eleven at night, he took a pill which was somewhat larger than he usually employed, his dose being generally from two to three grains. He fell asleep very shortly after, but before twelve his sleep became very much disturbed, and he was awoke by a continual fluttering and agitation about the centre of the body. On laying his fingers on his wrist, there was no perception of pulsation; he then laid his hand upon the cardiac region; he found the heart in a state of tremulous motion, circulating the blood by the smallest and quickest possible motion, transmitting, probably, not above a twentieth of its usual volume of blood; repeating this mere tremor perhaps a hundred times in a minute. He thus ascertained that this was the peculiar sensation, or tremulous motion, which had aroused him from his sleep. About one o'clock the bowels relieved themselves, but the bladder was so influenced as not to discharge its contents but by partial efforts. He experienced the loss of the sense of touch; the skin of the palms of the hands seemed like stiff thick leather, which at last appeared to be quite benumbed; they were bedewed with a clammy moisture, and were exceedingly cold; he judged that the temperature of the body must be very low, although he had scarcely sensation enough to be conscious of cold. The tremor about this time extended to the muscles, and they shook violently; he had horripilation, and perfect rigors. He experienced cramp and pain in the right ischiatic nerve, and could not put the muscles on the stretch without their becoming cramped. He was determined not to have recourse to any emetic, or to remedial agents, but to go through this unpleasant stage of narcotism, as he felt confident of the nature of the attack, and of the strength of his own constitution. At about three o'clock the abatement of the symptoms commenced; the heart's action became gradually more free, and the tremor soon after that ceased; the wonted sensibility returned, the pulse was perceptible, and beat with its due regularity; he gradually fell asleep, and remained very tranquil for two or three hours, after which he awoke with no symptom remaining except that of headache.

In the *Bulletin Universel* you find the remarks of the learned editors upon the experiments made by Dr. Walter, and which are to be found in *Buchner's Repertorium.* They point out the fallacy of trying the effects of an extract made from leaves gathered early in the spring; and show that, although he obtained no result until six grains had been taken, such would not have been the case with a properly prepared extract. However, the doubts which have been started have not influenced our more modern English practitioners, and you will find many of them at the present day recommend it highly. Dr. John Davy speaks of its combination with extract of hemlock, in pthisis pulmonalis and chronic catarrh, in

very strong terms of approbation, and he thinks that these two extracts combined afforded more relief than any remedy which he had tried; and others have spoken of its excellence, more particularly where it has been united with other narcotic extracts. I am so well pleased with the tincture, and have had such reason to doubt the goodness of the common extract of the shop, that I now invariably have recourse to the first of these preparations, and as I have had no occasion whatever to find fault with the tincture, I continue to prescribe it. Of this as much as a drachm may be taken without producing any unpleasant symptoms; nevertheless this is, in my estimation, a much larger dose than, under ordinary circumstances, you should administer. My experience of this remedy, and it is confirmed by that of a great number of medical men whom I have consulted, has taught me that I can obtain all I expect or require from much smaller quantities. I seldom find it necessary to prescribe more than thirty drops as a soporofic; as an anodyne, a still smaller dose often proves quite sufficient.

It is usefully combined with many of the narcotics. Camphor mixture is the best vehicle in which it is given; in about two ounces of this fluid it is readily conveyed, through the medium of the stomach, into the system. To this I sometimes add a half of a drachm of *tinctura humuli*, or tincture of hops. This is a very useful medicine; it has, however, alone, little or no anodyne power, but it is an excellent addition to any of the narcotics; it is particularly grateful and soothing to the stomach; its slight bitterness is by no means disagreeable. I am also in the habit of combining a few drops of some aromatic diffusible stimulus, such as the compound tincture of cardamom, the compound spirit of lavender, or the spirit of cinnamon, for these medicines form a most valuable adjunct to the more potent medicines; they diffuse a warmth and glow, and they promote a more rapid imbibition by the vessels of the stomach, and hence they cause a more instantaneous action upon the organs, or the tissues, to which the agency of the more important medicine is to be directed. You must, at the same time, be careful that too much stimulus be not given, and that your patient do not become habituated to the use of tinctures, which at last become as necessary as a dram to a regular drinker of ardent spirits. This class of medicines is to be ranked amongst the "cito et jucunde" of the older authors, who were generally fond of overloading their prescriptions; a judicious use of them is, however, of very great consequence. —*Ibid.*

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26. *External use of hyoscyamus.* By G. G. Sigmond, M. D.—Externally, hyoscyamus has been used with considerable advantage; and poultices formed of the leaves have been found to be sources of considerable relief in painful swellings, and likewise in cancerous and scrofulous sores, and they have the character of giving this relief where pain has existed for any considerable length of time, and has not yielded to internal remedies. I have seen this application made for tic douloureux, but must confess that I have not drawn any favourable opinion from what I have witnessed. It may, nevertheless, be worthy of a trial when all things else have failed, and it is extraordinary to find, occasionally, unlooked-for relief from some applications, when the most esteemed remedies have failed. In open ulcers these poultices seem not only to soothe the irritable nerves, but to induce a more healthy action; I am not aware that any bad consequences have resulted from this practice. Dr. Fourbine seems to have revived the old practice of fumigation, with the leaves and the seeds, for rheumatismal odontalgia, catarrhal odontalgia, and for pains in the neck and face. You will find his practice in the *Bulletin Universel*, but it is not altogether unattended by danger. The effect of emanations from various narcotics is well known to be productive of much mischief, and hyoscyamus has been ranked amongst those which have proved deleterious. I have had occasion to mention to you some curious instances, which are principally derived from the German Ephemerides, in which the vapour of the seeds, assisted by heat, have produced a very marked effect upon the passions, exciting anger, and a disposition to quarrel, and although Alston, in his "Materia Medica," which is distinguished by its proof of the great reading of its author, doubts the fact, there are so many instances of the power of fumes that we must prefer the authorities which state cases, to opinions, however ably delivered and ingeniously defended.—*Ibid.*

27. *On the use of hyoscyamus in cerebral affections.* By G. G. Sigmond, M. D.—Hyoscyamus has been said to be more useful in cerebral affections than opium, and this has led to its being indiscriminately employed in those states in which the latter drug is contraindicated; but you will find in all the stages, and in all the cases in which opium is prejudicial, that you will gain no advantage whatever from henbane. Thus, in inflammation of the brain, in arterial acceleration, or in venous retardation, it is not to be employed, except under circumstances which render it absolutely necessary to procure the refreshment of sleep after the proper depletions, for there is sometimes the most distressing state of watchfulness, which prevents all chance of recovery whilst it lasts, but when there is delirium, or mania, it must be avoided; indeed, Cullen goes further, he says, "It is more ready to give delirium than opium, and, therefore, we found it to give, in many cases, turbulent and unrefreshing sleep." The principal advantage to be derived from hyoscyamus is in cases where very great depression exists consequent upon some peculiar state of the brain and nervous system. In melancholy, in that sad state of gloom of mind which is called hypochondriasis, in lowness of spirits, in that almost unaccountable dejection which urges an individual to suicide, in the overwhelming debility which attends fevers, and more particularly that autumnal remittent which is prevalent in low, damp situations close to the water side, it is highly serviceable. You have often heard of the tendency to self-destruction about the month of November in this country, and you will constantly meet with cases of individuals of high intellectual attainments, of great powers of mind, nay, under ordinary circumstances, of great strength of soul, who have an undefinable sense of danger, who are fearful of committing some frightful act, and this sensation haunts them at every step; during the day they are miserable and wretched; the night brings no repose, and life, instead of carrying with it joy, peace, and contentment, is a source of misery and wretchedness. Now, if you trace these cases, you will find that many of them are amongst those who have spent their time in the country, or in the neighbourhood of a town close to some stagnant water during the fall of the leaf; a miasma has been generated, which has produced an almost imperceptible fever, which, to use a common expression, has "fallen upon the nerves," and this hangs upon the person, occasionally for a considerable time, producing the most marked depression. I have just had under my care, with a most intelligent general practitioner, two cases of this nature in the same family; the dejection of mind, the loss of appetite, the unwillingness, nay, the incapability of action, the despondency, were of a nature to excite great apprehension; still there was no pain, no bodily suffering, no actual complaint made; they both had arisen from the same cause, and we soon discovered it, and were fortunate enough to restore, very quickly, to their anxious friends, the sufferers from slow nervous fever. The change of air that is so often recommended is of service from the removal of the individual from the exciting cause. Quinine, or iron, for this state, is the remedy during the day, but hyoscyamus, in the very worst states, is the soporific which produces the desired effect, and, at the same time, excites the nervous system.—*Ibid.*

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28. *Hyoscyamus in nervousness.* By G. G. Sigmond, M. D.—In all those cases which are called "nervous," you will find more relief from the employment of this herb than from most other medicines. It is true that there are few terms more commonly used, both in and out of the profession, than "nervous;" it is a word which has acquired great numbers of significations, and many people at the same time profess not to understand what it means; they "bless their stars that they were born before nerves were invented." Certainly, to speak of "being nervous" is a mode of expression which is very indefinite, from the use that is made of it, but which, if properly applied, carries to the mind a very forcible impression of a peculiar state, for which we have no very appropriate language. Unfortunately, the same word has been long employed to express two states in direct opposition to each other: thus, we talk of a strong, weighty argument, delivered with boldness and energy, and in appropriate language, as "a nervous speech," and the orator as "full of nerve," whilst we, on the other hand, say that the individual who delivers himself with timidity, with hesitation, and distrust of his own power, is "highly nervous;" we regret that his "good sense was overpowered by his nerves." In the first instance, we mean to say that there is a tension and strength

of nerve; in the latter, that there is a laxity and weakness of nerve; yet, by some strange anomaly in our mode of expressing our ideas, we apply the same adjective to both these states of the nervous system.

Nervousness may, however, be defined to be a state of morbid sensibility, and this is displayed in a thousand different ways, according to the age, to the sex, to the temperament, to the habits of life, to the condition of society in which the individual is placed. The people in this country are altogether more predisposed to this state, than is to be found elsewhere; this may be partly owing to the climate, to the anxieties which arise out of the peculiar habits of life, and to our moral and social condition. There is at all times a great sensitiveness in the English character, and also that of another kind, in the Irish, which most materially affects the mental and bodily health, and predisposes to the morbid sensibility of which I speak. In the latter nation it is more transient; the impressions are never lasting; they are creatures of impulse; feelingly alive to every sensation, they quickly exhibit their passions, and as soon forget the cause of excitement, unless they instantly act upon it. There never was an Irishman who presented himself to a hospital or a dispensary, who did not complain of an impression about his heart, which, translated out of its figurative language, means that he has what we technically term, "an anxiety about the præcordia," one of the most marked of the features of a nervous state. Every thing sinks deeper upon the mind of an Englishman; he is quite as sensitive, but the impression is more lasting; he ponders, he revolves everything within him; if he be ill he thinks only of his feelings; he becomes morbidly sensitive of every change; he loses his spirits; he is oppressed with a strange fear, which is attended with a degree of anxiety; he ceases to look forward with hope; every present difficulty is magnified; and soon the body partakes of the morbid condition of the mind, and this is exhibited in many various ways, of which the want of sleep is one of the most characteristic symptoms, besides various signs which rank under the name of hypochondriasis; for this condition hyoscyamus is particularly adapted, not only to procure sleep, but to tranquillize the frame, to soothe the disordered spirits, and (whilst tonic remedies give strength to the muscles and to the organs generally) to impart to the nervous system a repose and quiescence, which, I think, can be obtained from no other source with the same quickness, certainty, and general good effect.

That this medicine has some peculiar stimulating effect upon the mind, is proved from the acknowledged fact, that it produces a most extraordinary species of excitement; under its influence the mildest and the gentlest beings become highly irascible, and subject to uncontrollable fits of anger. Patients who have taken it, and not in large quantities, have been known, upon the slightest provocation, to fly into most violent passions, and to become perfectly, but fortunately momentarily, mad with rage. Of the subjects that engage the attention of the medical philosopher, none can be more striking than the marvellous influence of some small portion of an herb, or a mineral, upon that reasoning power which elevates man above all the objects of this wondrous creation. A minute quantity of the juice which exudes from the poppy will clear the intellect, will elevate the mind, and will impart to it energy and vigour. Part of a leaf of the henbane will urge him on to violence and to passion; a small quantity of belladonna will impair his memory; a little hemlock will render him stupid.—*Ibid.*

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29. *Hyoscyamus in diseases of the genital organs.* By G. G. Sigmond, M. D.—Among the diseases in which hyoscyamus is found to be particularly serviceable are, affections of the neck of the bladder, irritable states of that organ, chordee, when there is great and acute pain in the neck of the bladder and about the pubes, whether it arises from a retention of urine, or, as Pott supposes, from irritation attended with spasm, for sometimes where the pain is most acute, on passing the catheter no urine is to be found; for this a combination of camphor and hyoscyamus is invaluable; and to Mr. Benjamin Bell we are indebted for the recommendation of this practice. Camphor alone is apt to produce many very uncomfortable and even distressing symptoms, nausea, heartburn, tremors; yet, when properly combined with hyoscyamus, it is perfectly free from any evil influence. Three grains of camphor to two grains of henbane, was a favourite remedy of Mr. Bell, and on some occasions he added either a grain of capsicum, or one of ipecacuan. The relief afforded by a few drops of the tincture of hyoscyamus, not more than

ten, for instance, in a glass of warm water, is quite striking, in that distressing state of irritable bladder and urethra which accompanies the inflammatory stage of gonorrhœa. Sometimes where the *ardor urinæ* is troublesome, and the desire to evacuate the few drops which exist in the bladder is so urgent, that it appears as if not an instant can be passed without it, and on the attempt the pain and spasm are most fearful to encounter. This dose, repeated every ten minutes, and some mucilage of gum arabic, will be found most decided in its effect before it has been administered three or four times; and it will not leave behind the bad effects which follow upon the tincture of opium which is generally prescribed.

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30. *On the use of belladonna in scarlet-fever.* By G. G. Sigmond, M. D.—That belladonna, in infinitessimal doses, should cure the simple form of scarlet fever, I doubt not, for, in fact, the less that is done the better, as Sydenham has told us:—"I judge it sufficient for the patient wholly to refrain from flesh and all kinds of spirituous liquor, and to keep his room without lying always in bed. When the skin is entirely peeled off, and the symptoms vanished, it is proper to give a gentle purge, suited to the age and strength of the patient. By this plain and manifestly natural method, this disease in name only, for it is little more, is easily cured without trouble or danger, whereas, on the contrary, if we add to the patient's evils either by confining him continually in bed, or exhibiting abundance of cardiacs and other superfluous remedies, the disease is immediately increased, and he frequently falls a victim to the over officiousness of the physician." These admirable observations are recognised to be true by every medical man who often sees scarlet fever rendered most dangerous by too great an anxiety. Of all the sequels which follow upon disease, none are so striking as the dropsy that, by bad treatment, is consequent upon scarlet fever. You will find that where patients have been confined to bed, or kept excessively hot, when the epidermis is about to be thrown off, that this dropsical effusion often occurs. There is a necessity that an evaporation should go on by the surface of the body, and nature removes that thin impermeable covering, or layer, which is spread over the whole of the external system, in order that this process may be carried on. If it be impeded in any way, an effusion of a fluid into some of the tissues, or cavities, will take place, and you will find, under such circumstances, that the best remedy is an imitation of nature, and which, as you may learn from Magendie's admirable lectures in the Lancet, now being delivered, is practised in dropsies upon the continent, and has also attracted some attention here, for several cases of abdominal dropsy have been cured by removing a large portion of the epidermis with a blister, or stimulating liniment. The mode of action is easily understood. Upon the removal of the cuticle, evaporation commences with the most surprising rapidity, and gradually the fluid contained in the abdominal cavity is entirely dissipated. The process of evaporation when the epidermis is removed, is a matter very well worthy of our deepest consideration; it explains many phenomena with which we are often struck, and which, till lately, have been unaccounted for. Thus we constantly see, more particularly in children, that where very extensive burns, or scalds, have taken place, and where large portions of the epidermis have been removed,—where everything has appeared to be going on remarkably well in consequence of surgical skill,—sudden death has occurred, or a gradual exhaustion of the powers of life. This has arisen from the rapidity with which evaporation of the fluids, necessary for carrying on the nervous functions, has taken place, and has no connexion whatever with the extensive injury, or with the pain attendant upon it.

In those varieties of scarlet fever which, at their onset, exhibit an intensity either of inflammation or congestion, after the due exhibition of cathartic medicines, the cold affusion, as recommended by Currie, and assented to by Armstrong, and by a great proportion of high authorities, is the mode of practice to be pursued, unless the congestive scarlatina requires venesection, which, in all cases, is most cautiously to be practised. In these states there is little time for the administration of belladonna; and, as we know what steps are to be pursued, we should hesitate before we venture to try an unknown remedy where we possess means on which we have every reason to place the firmest reliance. We are too apt to be anxious in our treatment of disease, and to see in too unfavourable a light, the symptoms that present themselves; indeed, the perusal of the delineations of

disease, by some of our best writers, excites much alarm in our minds; but we must bear in mind that these performances, which are many of them most masterly, are drawn from cases aggravated by neglect, whilst those who in general practice see the early stages have the means, by gentler methods, of checking their progress, and of watching the developement of symptoms, so as to control them. There are, likewise, some symptoms which usher in scarlet fever, which, though they might in other diseases excite great apprehension, are by no means to be considered so dangerous; thus, the delirium which is so often present is not unfavourable; nor are the rapid and vibratory pulse, the intolerance of light, and the redness of the tongue and fauces; they require to be watched, to be treated with gentle medicines; nor must too much be done. The cures related by Mr. Kingdom, a very experienced and well-informed surgeon, in five cases of scarlet-fever treated by belladonna, are before you; they are related in the periodical journals. They are the sort of cases in which, to judge from the narration, Hahnnemanism, in my opinion, would be highly serviceable; they are those which the medical practitioner would anxiously watch, and leave a great deal to be done by the *vis medicatrix naturæ.* As we well know that people are not satisfied unless something appears to be done, "a ten millionth belladonna, preceded by an aconite," is as good as anything Sydenham would have prescribed; indeed, under somewhat similar circumstances, he orders burnt hartshorn, crabs' claws, cochineal, and fine sugar, followed by milk and black cherry-water, with some syrup of citron juice; such are his views of the simplicity of these cases, if not injudiciously meddled with, for no doubt you may give what type you please to fever by injudicious treatment, and we too often deserve the reproach which has been thrown upon us, that we disguise our common diseases by the remedies which we employ.—*Ibid.*

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31. *On the application of the expressed juice and infusion of tobacco to the skin and cautions to be observed in their use.* By G. G. Sigmond, M. D.—That tobacco as a local application to the skin, is, in many diseases, highly serviceable, there is no doubt; but the following cases, which I have selected from a large collection taken from the different periodicals, will prove to you how necessary it is to watch, with the most anxious care, lest any untoward symptoms should present themselves where you have thought it right to prescribe it. The vomiting, the overpowering sensation of nausea, the sudden torpor of the brain, the death-like swooning, and even death itself, rapidly occurring, should be borne in recollection, and that these have occurred even when no portion of the epidermis has been removed:—

A little boy, aged eight years, had long been afflicted with *tinea capitis*, which had proved very obstinate. His father applied over his head the expressed juice of tobacco, obtained by wetting the dried tobacco-leaf sufficiently to damp it, and then placed between two iron plates, and pressed, by which means the juice is extracted. This fluid was applied at five minutes before two o'clock in the afternoon; the child almost immediately complained of giddiness and loss of sight, so that his father smilingly observed, "The boy is drunk;" he soon afterwards became sick, vomited frequently, and in large quantities; he had, also, an inclination to go to stool, but could not evacuate; his limbs tottered, his face was pale, and covered with a cold sweat; his mother assisted him to bed, into which he had no sooner entered than he had an involuntary discharge of fæces; his countenance now appeared sunk; his limbs were motionless, excepting now and then, when his legs were drawn towards his belly, convulsively; he complained of thirst, and of violent pain in his bowels; his whole body was bedewed with a cold sweat; at half-past five he expired, only three hours and a half after the application. On dissection no organic change was perceptible.

In another instance an infusion of this herb, made according to the "London Pharmacopœia," was used as a fomentation for a young man who was infected with the *itch*, for which tobacco had been strongly recommended: the application was made from head to foot. In the course of 20 minutes after this operation sickness came on, and, soon after, headache, vertigo, stupor, and universal debility, and his sufferings were very severe, and evidently had not proper means been taken he would have been poisoned. A countryman and his wife applied an infusion of tobacco to their skins, for the cure of the same disease; in less than an hour they felt as if they were intoxicated with spirituous liquor; this sensation was

very speedily followed by violent headache, dry hot skin, excessive vomiting and purging, spasmodic contractions of the hands and arms, and considerable dyspnœa; these symptoms continued so long as the solution of tobacco remained on the skin, which was removed by the warm bath. * * * * * * *

The bruised leaves have been applied for diseases of the skin, but their powers are energetic, and as likely to produce mischief as the infusion or decoction. Notwithstanding these effects, however, there are circumstances under which, with due precaution, it may be externally applied, and the formula of the London Pharmacopœia, which was formerly called *infusum tabaci*, but in the new edition is named *enema tabaci*, has been usually employed. The *recipe* directs that a drachm of the leaves of tobacco should be macerated for an hour in a pint of boiling water, and then strained. Dr. Collier, in his useful translation, very properly gives a note of interrogation, and observes, that Davy has shown, that one part, by weight, of Virginia tobacco is equal to $3\frac{1}{8}$ parts of other specimens which he analysed. Dr. Vetch has, in a paper which is to be found in the "Medico-Chirurgical Transactions," recommended the preparation of which I have just spoken, to be used as a local application in gout and rheumatic affections of the synovial membranes. He says, it not only alleviates the pain, but assists the part most materially in regaining its wonted strength, and also in acute migratory inflammation, and especially when it attacks the joints, the testicles, the sclerotic coat of the eye, in cases of erythematous inflammation; the precaution principally to be attended to is to avoid applying it to the stomach, unless it be desired to produce nausea; at the same time, he observes, that it is as well afterwards to rub the parts with eau de Cologne. This idea of the application of tobacco in *gout* is not altogether new; and some of the older admirers of the herb dwell upon its antipodagric qualities. Everard says that it radically cures the disease, even when taken in the form of snuff. It has been also used internally for that disease; and there was an old formula in our pharmacopœia, called the *extractum peticum*, which enjoyed some reputation as a valuable remedy in gout, in dropsy, in jaundice, and in asthma, and it was also said to be a specific for ague. It was at at one time believed to be the principal ingredient in the "Eau médicinale de Husson," once so celebrated for the cure of gout, and which is now universally acknowledged to owe all its power to colchicum.

Tobacco, externally used, is the great remedy resorted to by the natives of the Spanish Main, for tetanus, and in the Transactions of the *Medico-Chirurgical Society of Edinburgh*, two cases of *trismus* are narrated by Dr. Anderson, of Trinidad, in which good effects resulted from its use in the form of baths; four ounces of the dried plant were boiled for an hour, in eight gallons of water, and then added to impregnate the water of a tepid bath. Dr. O'Beirne has also used it as a fomentation for *dysentery*, persevering at the same time in the use of purgatives. It has a most decidedly beneficial effect in severe *itching* of the skin, particularly after the bites of insects, such as bugs, fleas, mosquitoes; and sometimes the most intolerable pruritus, which has yielded to no other remedy, has been completely removed by it; it also immediately allays the irritation consequent upon the stinging of nettles.

One singular property that tobacco possesses is, that of making the *hair* grow on parts which have been for a considerable length of time denuded. As the *ars cosmetica* comes within the range of our science, I may mention to you that it is the basis of some of those preparations which are puffed forth in the papers as "renovators of the capillary ornament of the head," for in such language have I seen them spoken of. Some of these lotions are of very considerable service after long ill health, after fevers, and various affections of the system that have checked the growth of the hair. From observations which I have made, I think that what has been sold under the name of the "Balm of Columbia," is made from the leaf of tobacco; it is very serviceable, but it is also dangerous, if it have been kept for any length of time, or if it be not properly diluted. Although it may not possess the power ascribed to the "bear's grease," of turning a deal-box into a hair-trunk, yet the juice of tobacco will very much tend to the growth of the hair; but Magnenus not only ascribes this power to it, but he recommends it as a *cosmetic*, to dispel redness of the face, blackness of the teeth, roughness of the skin, and, though last, certainly not least, to drive sorrow from the human face divine. It is employed for the cure of some of the diseases of animals,—the mange amongst dogs; and

shepherds likewise, use a decoction, though not as much as they did before the introduction of mercurial ointment, to destroy the contagious scab to which flocks are subject.

Great expectations were formed of the value of bougies wrapped in a leaf of tobacco, in *suppressions of urine*. To Dr. Shaw, of Philadelphia, we are indebted for the first practical information on this point. He has narrated two successful cases, in one of which he introduced a small-sized bougie, which, having been previously moistened with water, was enveloped in a leaf of tobacco, and carried down to the stricture, where it was retained a quarter of an hour; it then passed the stricture and entered the bladder; sickness was produced whilst the instrument was in the urethra. In the other case, the bougie was smeared with the extract of tobacco; the operation was performed three times, and produced such torpor, and relaxation of the sphincter vesicæ, as for some time to render the individual upon whom it was tried, incapable of retaining his urine.—*Ibid.*

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32. *On the employment of tobacco as a cataplasm.* By G. G. Sigmond, M. D.—Tobacco is occasionally employed as a poultice or *cataplasm*, in some diseases, and has had frequent testimonies from distinguished physicians in its favour. In the first volume of the "Medical Reports," you will find that Dr. James Curry cured a case of *epilepsy* by a cataplasm formed chiefly of tobacco, applied to the scrobiculus cordis. The paroxysm appeared to be intermittent, and to return periodically, every afternoon; the remedy was applied an hour before the expected attack, by which a powerful impression on the system was produced, and the paroxysm of epilepsy prevented. This practice, repeated for several days, at the expected periods, probably destroyed the diseased association, for the cure was permanent. In this form it is a very powerful anthelmintic. Dr. Giles Everard, a Dutch physician, wrote a book entitled, "De Herba Panacea, quam alii Tabacum, alii Petum, aut Nicotianum vocant brevis commentariolus, quod mirandæ at prorsus divinæ hujus Peruanæ stirpes facultates et usus applicantur." This appeared in an English form in 1659, under the name of "Panacea." In this it is said, "the juice of the leaves of tobacco clarified, and with sugar made into a syrup, and taken in a morning, in a small quantity, drives forth stomach and belly worms; yet you must bruise the leaves, and wrap them in a cloth, and lay them to the navel of the patient, and give him a glyster of sugar and milk." That tobacco has very striking *vermifuge* powers there can be no doubt. That obstinate cases of tape-worm have been cured, that intestinal worms in general, and the larvæ of flies, have been dislodged from different parts of the body, there can be no doubt; but the greatest care and caution is absolutely and indispensably required. That a cataplasm is the best means of employing the herb we must allow, because it can instantaneously be removed; whilst, on the other hand, the injection, or internal administration, may produce its tremendous effects rapidly, and with an energy that nothing can control. The cataplasm has been likewise recommended in cases in which the stomach has become torpid from a large quantity of opium, or of the other narcotics, and is insensible to the stimulus of emetics. In *apoplexy* it has been suggested with a view of bringing the stomach into action, and thus exciting the system, more particularly where the disease has been produced by overloading that organ; where the power of deglutition has been suspended, in asphyxia, and, indeed, where "desperate diseases demand desperate remedies" to stimulate the system, a cataplasm of tobacco to the stomach is one of those resources which belong to the healing art, where the remedies which long experience has taught us to be generally serviceable, fail us, or the rapid onset of disease demands extraordinary relief. In making a cataplasm, or in applying tobacco, it is always necessary that some degree of heat should be employed, that the active principle should be developed; but care must be taken in all preparations of the herb, that this principle be not dissipated by too much heat. Even the boiling water directed by our pharmacopœia to be poured on it, though it is the original *recipe* of the celebrated surgeon Pott, may be considered as materially affecting the strength and power of the infusion.—*Ibid.*

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33. *On Tobacco, administered per anum.* By G. G. Sigmond, M. D.—An *infusion of tobacco into the rectum* has been from an early period employed, and whether in the form of infusion, decoction, or smoke, or whether the leaf itself be

introduced into the anus, it undoubtedly is a therapeutic agent of very considerable importance. It may be had recourse to under many circumstances; but it must be always borne in your remembrance, that although it proves an effectual remedy, its operation is most energetic, and that it is so sudden that you must always be upon your guard, and prepared for its violence of action; the anxiety about the præcordia, vomiting, the death-like paleness, the cold sweat upon the forehead, which first present themselves, are but precursors of symptoms most distressing to undergo, and even to witness, and the words of Etmuller must be upon your minds,—"Clyster ex decocto tabaci summe periculosus est." Sir Astley Cooper and Sir Charles Bell record fatal cases from its injudicious use; the latter surgeon, speaking of a case of hernia, says,—"The patient's strength held up until the tobacco glyster was administered to him, after which he very suddenly fell low and sank." Fuller gives us an instance of death by an enema of tobacco, infused in sack, for colic:—"Mr. Osbeston, he fell presently into horrid burning pain, convulsions, fainting, and so perished miserably upon the spot, as it were all in flames." In the *Edinburgh Medical and Surgical Journal* is to be found a case of convulsions and death an hour or two after the injection of two drachms of tobacco, infused in eight ounces of water. A single drachm, the same proportion as that to which I have directed your attention as the formula of the pharmacopœia, proved fatal in the case of a female, mention of which is made in the "Acta Helvetica" for 1762. Dr. Paris tells us that he witnessed a lamentable instance of its effects, where a patient had been exhausted by previous suffering: a medical practitioner, after repeated trials to reduce a strangulated hernia, injected an infusion of tobacco, and shortly afterwards sent the patient in a carriage to the *Westminster Hospital* for the purpose of undergoing the operation, but the unfortunate man arrived only a few minutes before he expired.

Of the fatal effects, within a very short time, of using large quantities there are many cases on record. Dr. Grahl, of Hamburgh, narrates an instance where death occurred in three quarters of an hour, after dreadful convulsions and vomiting, in consequence of a female, who merely suffered from indigestion and costiveness, following the recommendation of a woman who advised her to boil an ounce in water for fifteen minutes; and the "Journal de Chimie Médicale" contains a case of apparent intoxication, and rapid death succeeding upon a decoction of two ounces. The smoke has likewise produced bad effects when injected.

Notwithstanding those untoward events the tobacco enema is a useful adjunct to the materia medica, and has proved very serviceable in intermittent fever, both as a cataplasm and as an injection previous to the paroxysm. For hemorrhoids it has been employed. Dr. Darwin gives us an example in the "Zoonomia," of a lady, who had a bleeding of many ounces in the day, which resisted injections of solutions of lead, of bark, of salt of steel, and of turpentine, with some internal astringents and opiates; but an injection of the smoke of tobacco, with ten grains of opium mixed with it, was used; it produced, after twice failing on account of some imperfection in the machine, great sickness and vertigo, and nearly a fainting fit, from which time the blood entirely stopped. A similar effect has been produced in hemorrhage from the rectum, by thrusting into it a leaf of tobacco, and leaving it there for some time. In the memoirs of the *London Medical Society*, and in the "Medical and Physical Journal," are cases related by Mr. Blair, of Great Russell-Street, Bloomsbury, in which obstructions of the œsophagus were removed by a tobacco glyster. In one instance a morsel of beef had stuck fast in the œsophagus for three days, and had rendered the patient, a female, incapable of swallowing either liquid or solid. From the difficulty she always had in swallowing solid food, and as the probang would not pass more than half way down towards the upper orifice of the stomach, it seemed probable that a partial stricture existed. After various fruitless attempts to dislodge the obstruction, a drachm of tobacco infused in water was directed to be injected; a first trial did not produce vomiting, a second, however, did, and the patient was saved by the vomiting up a portion of the meat.

An enema of tobacco has been tried in order to induce the dilatation of the os uteri in difficult parturition. In a case in which it was suggested to Dr. Dewees by Dr. Jones, of New York, it produced great sickness, vomiting, and fainting, but the desired relaxation did not take place; it was again employed, but it appears

that there was great distress without the smallest benefit, the soft parts remaining equally rigid as before its exhibition. In ileus, in colic, in obstinate costiveness, it has been used. The following ludicrous account of its success is to be found in a work printed in 1720, entitled "The Use and Abuse of Tobacco:"—"I have known it used," says the author, "with very good success by making a decoction of it in urine for a glyster in a violent iliac passion, when several other things failed. The method was this: after having, with much difficulty, injected the glyster, and spread a carpet upon the ground, the patient was constantly rolled upon the floor for some time till he felt a strong motion for stool, at which time there was a copious discharge of hard excrement and wind, to the sudden relief of the tormented patient and the joy of his despairing friends."

Certainly, in diseases of the lower part of the intestinal canal, these modes of administering tobacco are very useful, and we find, both among the foreign practitioners and those of our own country, first-rate authority for it; amongst these, De Haen, Gaubius, Feller, Rozier, Schœffer, Vitet, have more particularly made it the subject of specific inquiry. In strangulated hernia, the smoke and infusion of tobacco, as being equally useful, were first more particularly brought into notice in this country by that great ornament to surgery, Percival Pott, so long attached to *St. Bartholomew's Hospital.* His practice led him to prefer the smoke to the infusion, because he thought the effects which both are apt to produce on the nervous system of the patient, are lighter in the former than in the latter, but where there is no proper machine at hand, as time in such cases is always precious, he used the infusion, and generally very successfully. The following observations from the pen of that experienced and honest man are invaluable:—

"The symptoms arising from the intoxicating quality of the tobacco, the languor, the cold sweats, &c., which this weed causes, more especially in those who have not been accustomed to it, are, as I have said, I think rather more from the infusion than from the smoke; but though I have often used it I do not remember ever to have seen any ill effects from it. It generally makes the patient very sick, and produces a fainting and cold sweat, which to those who do not immediately reflect on the intoxicating quality of tobacco, and the symptoms of such intoxication, may appear alarming, but whether it be from the swooning, or from the irritation made in the intestinal canal, or, which is most likely, from both conjointly. I have several times seen ruptures which have resisted all attempts by the hand, return of themselves untouched during the influence of such glyster. I have, also," he continues, "seen them both fail after fair and repeated trials. Whoever expects infallibility in medicine will be disappointed; but I can with truth affirm that I have seen both the smoke and the infusion succeed much oftener than any thing else, and sometimes in very desperate cases."

The narratives which he gives are very well worthy of your attentive perusal, and from the practice of modern surgery we may learn that where protruded intestines become painful and inflamed, and cannot be restored to their proper situation, the remedial powers of tobacco may fairly be tested.—*Ibid.*

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34. *On the Use of Tobacco in Tetanus.* By G. G. Sigmond, M. D.—In "The Trial of Tobacco," written by Edmund Gardiner, about 1648, it is said that "the suffumigation of tobacco being taken, is a good medicine for the starknesse or stiffnesse of neck called tetanus, and for any pains or aches in the body proceeding of the cause that tetanus doth." Magnenus, Neander, and others, held the same opinion, but it has only of late years again been resorted to.

Tetanus is one of those diseases which have occupied the attention of authors, both ancient and modern, without their arriving at any sound conclusion. The theories that have been advanced after the most minute and laborious investigation are as unsatisfactory as are the numerous remedies which have been proposed for its cure. The surgeon, even in such a field of inquiry as he had in the war in Spain, has not been enabled to enlighten us. The valuable paper of Sir James Macgregor in the "Medico-Chirurgical Transactions," the sensible observations of Dr. Hennen, the experience of Larrey, given to us in his memoir, exhibit to us proofs that no dependence can be placed upon the general utility, or uniform applicability, of any remedial agent. The catalogue of means employed at various times and in different cases to relax this rigidity of the muscles is very long; it comprehends every one of the narcotics, bleeding, both profusely and moderately,

cold immersion, mercury, so as to produce salivation in twenty-four hours, electricity, ammonia, assafœtida, alkalies, acids, indeed all that the most acute and active intellect could suggest. Sometimes, when every resource had been exhausted, and the patient left to himself, he has recovered; some of the ancients, and among the moderns, Mr. Hunter and Dr. Parry, point out that recovery is sometimes spontaneous; and the prognosis of that learned and practical physician, Dr. Parry, which is borne out by an observation of Celsus, will generally be found to be correct, that if in an adult the pulse, by the fourth or fifth day, does not reach 100, or, perhaps, 110 beats in the minute, the patient almost always recovers; if, on the other hand, the pulse on the first day is 120, or more, in a minute, few instances will be found in which he will not die.

I have spoken to you of the *external* application of tobacco in tetanus; it has likewise been employed as an *injection*, and has been extolled highly. Mr. Duman, of Grenada, published a case which was much spoken of at the time; you will find it detailed in the 42nd number of the "Edinburgh Medical and Surgical Journal;" it was successfully treated, but as the pulse never rose above 94, it may be fairly ranked amongst those instances in which a remedy has obtained the credit of curing a disease which would, according to the prognosis which I have just quoted, have ceased spontaneously.—*Ibid.*

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35. *On the Use of Tobacco in Hydrophobia.* By G. G. Sigmond, M. D.—The frightful convulsions that follow upon wounds, and the rigid spasm to which we give the general name of "tetanus," are supposed by many very acute physicians to bear a striking analogy to that formidable disease which is produced by the bite of a mad dog. Dr. Percival of Manchester, Dr. Rush of Philadelphia, Dr. Gerard of Lyons, and also Mr. Ward of Manchester, have severally expressed this opinion, and have recommended practitioners to apply the same remedies for tetanus and for *hydrophobia.* Notwithstanding all the intellectual labour, the unwearied industry, and the repeated experiments from age to age of some of the most sagacious inquirers, it is a melancholy truth, that we must confess our total ignorance of the nature, the seat, the proximate cause, and of the treatment of hydrophobia; nor have we advanced one step in unravelling the mysterious web which veils from our sight the truths that have been so long sought for. There is but one consolation that we can administer to the afflicted friends of the patient, and that is, that his sufferings are by no means acute, that pain scarcely attends the different stages; and that the by-stander is much more alive both to the danger and to the symptoms that present themselves than is the unfortunate individual. There is another thought, however melancholy the impression may be, which is, that death very speedily terminates the scene, for seldom does life extend beyond about forty-eight hours after the symptoms have developed themselves; so that the bitterness of sorrow which must attend the sad spectacle of disordered reason aggravated by unwonted sensation, long continued, is always spared.

In the year 1807 tobacco was suggested by Dr. Huggan as a proper remedy of which to make a fair trial in hydrophobia; and it was again recommended by the able writer of those articles on this herb which I have mentioned to you as existing in the old *Medical and Physical Journal;* and the reasoning on which it was proposed was very good. He pointed out the property possessed by the genus *nicotiana*, and more particularly by the species *tabacum*, of resolving the spasm of muscular fibre. Dr. Clutterbuck had an opportunity of which he could not fully avail himself, of its effects, but which enabled him to form some estimate of its value. It afforded some relief to a delicate child in an advanced stage of the disease; it gave tranquillity for three hours, but it was not persevered in, so that he could not ascertain the maximum of its powers.

In the latter part of the year 1834, I had two opportunities of witnessing its effects. In one, it had not so complete a trial as in the other, for in one it was late in the disease, and strychnia had been previously given to some extent. Both these instances of hydrophobia have been published by Mr. Pettigrew. In one individual, George Grindley, who was admitted into the hospital when the symptoms were fully developed, seven enemas of tobacco infusion, at short intervals, were administered; and the conviction upon my mind is, that the spasms were alleviated, but that we have not attained any further addition to our power of conquering the disease. When I first was called into consultation, he had, under

the direction of Mr. Pettigrew, already received two injections with a view of producing prostration of strength, and subduing the violence of spasm, without an abstraction of the vital fluid. It did not produce that impression upon the system which I should have expected; there was much less of sickness, of tremor, of cold sweat, than tobacco, under ordinary circumstances, causes; the prostration of strength was at no time very strongly marked. I should not hesitate again to make trial of tobacco, from a feeling that it renders the last hours of life more supportable, but not from any confidence in its power of arresting the progress of the disease.

It was a very singular circumstance, that within three weeks from the death of this patient, there was admitted into the hospital a female, with symptoms so similar to those that had been exhibited by this man, and by Thomas Porter, that if the history of the symptoms had not been most carefully traced, it would have been called hydrophobia, from the bite of a rabid animal. The same dread of swallowing liquids, of the admission of cold air, accompanied by nervous twitchings, almost amounting to spasm, were strongly developed, and I have never witnessed hysteria so much resembling the fearful malady of which I have spoken, as in this young woman who was restored to health.

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36. *On Tobacco taken internally.* By G. G. Sigmond, M. D.—Tobacco taken internally, is a very serviceable *diuretic*, although it has fallen into disrepute. In thirty-one dropsical cases in which Dr. Fowler employed it, eighteen were cured, and ten relieved; and likewise in dysentery, out of eighteen cases seven were relieved, and ten completely cured. He gave it in different forms; an ounce of the leaves to a pint of spirit, or of vinegar, forms a tincture, or a vinegar, of which from ten to twenty drops are recommended to commence with. The following formula for pills is likewise given, and is the most certain mode of exhibiting the tobacco:—

Pulveris foliorum nicotianæ Virginiensis, caute siccatorum; *Conservæ rosæ rubræ*, utriusque, ℥j; *Mucilaginis acaciæ*, q. s.; fiat massa de qua pilulæ sexaginta formantur.

To Dr. Fowler's "Medical Reports" on the effects of tobacco, I must further refer you; to him it was suggested by a letter from Dr. Gordon, of South Carolina, addressed to Dr. Hope, in which the surprising effects of the ashes of tobacco, in *dropsical cases*, was stated; a half of a drachm, or a drachm, of the alkaline fixed salts of tobacco, given in as small a quantity of water as possible, twice a day, producing the happiest results.

In *disordered respiration* this herb obtained the well-merited confidence of the older physicians, in cases where no organic alteration has occurred. It has, however, nearly fallen into neglect, from which state it will most probably revive, for it has lately been tried to a very great extent, and with no small success, under a false name. At the time that the *Lobelia inflata* was the subject of great panegyric, and that clinical lectures appeared in the periodicals, extolling its virtues in asthma, there was not a particle of it in the drug market. One firm, at the head of which was a shrewd, intelligent, practical man, had formerly had great experience of tobacco, and he proclaimed that his house was the sole mart for *Lobelia;* he made a spirituous tincture of the tobacco, which he supplied to the trade pretty freely, and it became a great favourite of the profession. My own experience led me to its frequent employment; nor did I discover for some time the artifice which had been practised. It, however, induced me to place great reliance on the æthereal tincture of tobacco, to mitigate the paroxysms of spasmodic asthma. It must, however, be remembered that where the lungs are diseased it is capable of exasperating the complaint, and that it always demands the careful discrimination and judicious watchfulness of the medical man.—*Ibid.*

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37. *Medicinal qualities of Stramonium.* By G. G. Sigmond, M. D.—The most important medicinal results may be obtained from the use of stramonium, and with judicious management, it constitutes one more substitute for opium, which, on some occasions, is highly valuable. In the United States, this medicine is in much more common use than amongst us, and you will find that they have, in their numerous periodical publications, many instances of their successful employment of it in many morbid states. I am persuaded that you will often be in-

duced, in your practice, to prescribe it, from what I am about to mention to you. I have myself been in the habit of employing it, and have in no instance found any bad effect from it, excepting a disordered state of vision, in which every object appears coloured with rainbow tints, such as is to be observed as a result of some of the other narcotics, and which I have uniformly found to be a monitor of more untoward symptoms. You will occasionally hear your patients, when under the influence of narcotics, and more especially of those which I have classed under the nightshade tribe, speak of films, or webs of flies before the sight; and when that is the case, you will do right to abstain from the particular narcotic, and change it for some other approaching to it in its power, and at the same time to watch narrowly, lest any cerebral affection follow it. The optic nerve quickly influences the nervous system, or it may be that it is the indicator of an unwonted state.

The extract of stramonium of the London Pharmacopœia is a very good preparation; the formula directs that fifteen ounces of the seed of the thorn-apple should be macerated in a gallon of boiling distilled water, for four hours near the fire, in a vessel tightly closed; the seeds are then to be bruised in a stone mortar, and returned to the fluid from which they are taken for this operation. This liquor is boiled down to four pints. Whilst hot it is to be strained, and then evaporated to the necessary consistence. This is founded upon the preparation recommended by Dr. Marcet, given in the seventh volume of the "Medico-Chirurgical Transactions," and of which he administered from an eighth of a grain to a grain. The London market is, in a great measure, supplied from the gardens at Mitcham, where it is cultivated for that purpose, but I prefer that which grows in the wild state, for, as with many other of the narcotics, it is to be observed that its active principles are more developed when in its natural soil than in an artificial one. It is true, that attentive cultivation is of essential importance to some of those valuable vegetables upon which we are dependant for our comforts and luxuries, and that certain manipulations are required to bring them to perfection, as is the case with the cotton plant, with tobacco, and with flax; but where medicinal virtues are to be obtained, a plant is to be preferred that has chosen its own soil for the developement of its seed, and for the full maturity of its offspring. It is difficult to point out what the precise nature of the soil may be on which a particular plant will vegetate more luxuriantly, but I think that you will generally observe that that which it spontaneously selects is more advantageous to it, and more uniformly renders its secretions pure, and causes the plant to abound in its innate proper juices.

The alkali to which it appears that stramonium owes its efficacy, has been called daturine. It is said to be in combination with an acid which approaches nearly to malic. From the experiments of Zollikoffer, it would seem that the active principle is not lost by long boiling, and that the essential oil possesses none of the deleterious powers that reside in other parts of the plant.

The extract of stramonium is very serviceable in mania, and although Cullen observes, "that he has no doubt that narcotics may be a remedy in certain cases of mania and epilepsy, though he has not, and he doubts if any other person has, learned to distinguish the cases to which such remedies are properly adapted," yet I believe that there is no drug in the list of the materia medica which warrants a greater degree of confidence than does this in the greater number of maniacal cases. Greding has given to us the result of much observation and experience on the subject; and we find that in most instances in which he tried an extract upon which he could depend, it induced tranquil sleep, and exerted a salutary influence over the disease.

In the hospital at Stockholm, fourteen cases of epilepsy and convulsions were treated with stramonium. Eight were reported to be cured, five received relief, and one obtained no relief; and a girl, a servant at Stockholm, who was subject to severe convulsions, which were attributed to her being possessed of a demon, was completely restored by it. Reef, also, a Swedish physician, was successful in its employment. Murray has, likewise, in the "Apparatus Medicaminum," furnished us with a great deal of authoritative information of its value in puerperal convulsions.

Our American friends speak of it in very strong language, as a medicine of utility in epilepsy. Dr. Ives, of New Haven, used it in not less than a dozen cases

of this disease, in most of which he had perfect success. Dr. Marcet, in the yea 1826, communicated to the profession his experience in acute pains of differen kinds, and he believed that it relieved them more effectually than any of the clas of remedies of which I have spoken to you. He instances "four cases of sciatica in which it proved decidedly beneficial. Also two cases, in which this complain was combined with syphilitic pains. It failed in two cases of diseased hip-join It caused considerable relief of pain in a case of supposed disease of the spine followed by paraplegia; and likewise in one of cancer of the breast. It allaye materially the pain occasioned by an acute uterine disease. It was of great an repeated utility in a case of tic douloureux. Its utility in a second case of th same description was very doubtful; and in a third it completely failed." Dr Eberle, of the United States, in his work on Materia Medica and Therapeutics remarks, "that he has used it in three cases of sciatica within a year past, and i every instance with the most decided advantage. In tic douloureux it has occa sionally been found of advantage, where the sad suffering has resisted a variet of remedies."

Professor Bigelow, in the "American Medical Botany," says, that he employe it in a case of tic douloureux of long standing, in which he gave it in as larg doses as the stomach would bear, and in this he gave it with decided relief. H likewise remarks, "that several practitioners have spoken to him of its efficacy i this formidable disease." Dr. Barton, of Philadelphia, is another America physician who has had frequent opportunities of employing the datura stramo nium, and he draws the attention of the profession to the exhibition of the seed in chronic rheumatism. In Kentucky it appears to be the favourite remedy Zollikoffer says, "In chronic rheumatism it may justly be ranked among the mor prompt and efficient articles of the Materia Medica which have been generall resorted to for its removal. In this disease I believe it is less liable to disappoin the practitioner, than perhaps in any other. I have directed its use, both inter nally and externally, in a number of cases that have from time to time claime my professional consideration, with the happiest and most unequivocal success." Eberle supposes it to be the most efficacious remedy we possess in cases whic are attended by an irritable, quick, but weak pulse, with swelled joints, and unat tended by any great pain, unless on being moved.

Notwithstanding these high testimonials, I do not think that stramonium ha had a fair trial in this country; I have frequently had occasion to employ it, an am most willing to speak of it as an important and valuable remedial agent. think I have seen more relief afforded, in some painful affections, by an extrac of stramonium, than either by belladonna or hyoscyamus. Generally, where som degree of fever has been present, which would have made me hesitate to emplo either those herbs or opium, I have administered it with great satisfaction t myself. The smoking stramonium, in various states of difficulty of breathing seems to have been the theme of more medical consideration in this country tha either its internal administration or its external application, for the American recommend it in burns, hemorrhoids, psora, and other cutaneous affections; shall, therefore, defer till my next lecture entering upon a subject which is ver interesting to us.—*Ibid.*

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38. *Report by* M. Martin-Solon, *on the Inoculation of Morphine, &c., propose by* Dr. Lafargue. The effects produced by the inoculation of morphine are con sidered by Dr. Lafargue as worthy of consideration, both in their bearing o practical medicine and on medico-legal questions. If the point of a lancet, dip ped in an aqueous solution of morphine, is inserted horizontally, about one lin in depth beneath the epidermis, and is allowed to remain there a few seconds, th following effects are observed:—About a minute and a half after the operation, small pimple, with a diffuse rosy areola, and slightly itching, is observed. I about twenty minutes, the pimple becomes about four lines in diameter, and on line in thickness; it is flattened. Its colour is somewhat more than that of th skin, it is hard, its areola is very red, and about an inch and a half in diamete its heat has increased, but the sensation of itching remains about the same. Dur ing the first hour, the pimple and its areola are at their highest degree of de velopement. From this time, the appearances diminish, and at the end of two o three hours the red colour of the skin has entirely disappeared, the pimple ha

become very flat; but it does not entirely disappear, until from twelve to twenty-four hours after the operation. If several punctures are made near one another, in the same manner, the appearances of the pimples are as above described, but the areola are confluent; the heat and itching are considerably increased. The appearances, however, disappear in the same time as when a single puncture only has been made. The general effects which Dr. Lafargue experienced from thirteen punctures thus made upon the front of his forearm were, heaviness of the head, frequent yawnings, clamminess of the mouth, and an invincible desire to sleep; the quantity of muriate of morphia employed not having exceeded a quarter of a grain.

The effects just noticed, Dr. L. considers as showing that the inoculation of morphia may supersede the use of blisters and ammoniacal applications, and that it merits employment more particularly where the object of the physician is to produce the local effects of morphine. Its effects as a rubefacient are also very marked. Hence its probable utility in superficial neuralgia and in chronic rheumatism, &c. The local effects produced by the inoculation of belladonna, of strychnine, of sulphate of quinine, were different from those above mentioned. In employing other opiate preparations, such as the laudanum of Sydenham, and solutions of opium in fat, milk, coffee, beer, mucus, acetic acid, and gelatine, the proportion of opium being extremely small, the same results were obtained, and no such effects were produced when any of these substances were inoculated without the opium.

M. Martin-Solon repeated the experiments of Dr. Lafargue. From the inoculation of all the common preparations of opium, he observed the same effects as those above mentioned; except that the papulæ sometimes acquired a diameter of an inch and a half, and that they then became radiated and diffuse. To ascertain whether any other substances were capable of producing the same phenomena, belladonna, strychnine, the gastric juices, chyme, &c. were employed, and the effects which were observed destroyed the exclusiveness which Dr. L. wishes to attribute to the action of preparations of opium.

The conclusion which may be derived from these experiments, may be of some assistance in determining the absence of opium from a fluid which is suspected to contain it; seeing that in all the cases in which fluids containing opium were inoculated, (in one instance, the proportion of opium to the solvent was as 1 to 2000,) the phenomena described above were observed by both Dr. Lafargue and M. Solon. The developement of the papula can, however, be only regarded as presumptive evidence of the presence of opium; seeing that other substances are capable of producing effects so nearly identical as not to admit of any definite distinction.

Dr. Lafargue has also inoculated a concentrated solution of emetic tartar and the croton oil. The former has always produced a pustule similar to that of acne simplex, containing pus, twenty-four hours after the operation; and the effect of croton oil has constantly been the production of a furuncle thirty-six hours after the introduction of the medicine. Neither of these substances has, however, been sufficiently employed to allow of any inference as to the advantage which this mode of application possesses over that in general use. Its simplicity, nevertheless, renders such an experiment very easy.—*B. and F. Med. Rev.* from the *Bulletin de l'Acad. Royale de Méd.* Nos. 1 and 7. 1836–7.

SPECIAL PATHOLOGY AND SPECIAL THERAPEUTICS.

39. *Remedy for Mercurial Salivation.*—M. Brachet of Lyons, states that the crystallized acetate of lead, given internally, in the dose of a grain, night and morning, in form of a pill, completely cures mercurial salivation, in less than two days. In a memoir communicated by him to the Academy of Sciences in November last, he relates eight cases of very severe mercurial salivation of several months duration, which had resisted a host of active remedies, amongst others opium in large doses, purgatives, &c.; and which yielded, as if by magic, to the pills of acetate of lead. M. B. sometimes adds to each pill a quarter of a grain of laudanum.—*Gaz. Méd. de Paris*, 9th December, 1837.

40. *On St. Vitus's Dance.*—Nearly one hundred cases of this disease have come under the notice of Dr. Stiebel; and in not one of these, he says, was wanting the evidence of an irritation of the spinal nerves. Few of the patients, during the course of the disease, have not had pain in some one of the vertebræ, and all, either in consequence of the treatment employed or spontaneously, have recovered. Dr. Stiebel believes that the cause of this disease is an irritation of the motor nerves of the spinal marrow or of the medulla oblongata, depending on inflammation or turgescence. Chorea almost always originates during the developement of the spine and of the spinal marrow; generally between the seventh and seventeenth years, but occasionally at later periods of life.

The following appears to be the anatomical explanation of the disease:—The spinal marrow, and the origins of its nerves, lie within a bony cavity. If, during their developement, there occurs a want of relation between the bones and the nervous system, so that the cavity does not correspond to the increasing marrow, the nervous origins become subject to an irritation as of a foreign body. This disproportion may be the effect of swelling of the spine, without previous change in the nerves, as well as of turgescence of the membranes of the nerves and the nerves themselves, the spine remaining unaltered; but the first is of most frequent occurrence. The spasms generally cease during sleep, although the irritation continues. The chorea may be limited to one side of the body, or to parts of less extent, according to the situation of the irritation. It is liable also to change its place, to become general after having been but partial, and *vice versâ*. It may also alternate with paralysis, which is as little dangerous as the original disease. The change of locality of the disease is not sudden, as in hysteric spasms, but at different periods of the progress of developement, each of which is of a certain duration.

Partial chorea of individual motor nerves of the organs of sense constitutes some of the most remakable forms of the disease; such, for instance, as a constant twitching of the eyelids, distortion of the eyes, abnormal motions of the tongue, and also uninterrupted sneezing. A very common form of partial chorea consists in the constant and unavoidable utterance of inarticulate sounds. As all the motor nerves of the organ of voice are not affected, the patient can still speak, but with effort and stammering, the inarticulate sounds being afterwards made more uninterruptedly and with greater violence. This utterance of sounds frequently continues for weeks, only interrupted during sleep; a long-continued aphonia frequently follows, or a shooting pain on one or the other side of the breast, or asthma. Palpitation of the heart accompanies chorea, both partial and general. In examining individuals suffering from either local or general chorea, it will be very rare not to find tenderness and swelling of some vertebral bone; but such an examination must be repeated, as the sensibility is frequently not discoverable until the disease has lasted for some time. In all the cases of chorea which Dr. Stiebel has examined, he has discovered no other cause than that above mentioned, although he does not deny the possibility of the existence of other causes;—e. g. metastasis of rheumatic inflammation, injuries of the spine, &c. There is doubtless an hereditary disposition to chorea, it having been known to affect whole families. It is particularly frequent among the Jews. Dr. S. has not himself had any opportunity of examining the bodies of individuals who have died of chorea; but, in all the cases which he has read, changes in the spinal marrow, its membranes, or in the spine, are mentioned.

The treatment of chorea is simple. Leeches, followed by mercurial inunctions, and then by more active exutories, are indicated when a painful vertebra is found to exist. If no tender point is at first discoverable, leeches and blisters may be applied along the spine. Calomel is generally given internally as a derivative. If the disease is not thus relieved, repeated cold douche-baths on the spine are almost always of advantage. As a general rule, the disease is cured between the fourteenth and the twenty-first day by this treatment; but, should not this happen, the disease may be left to nature, which almost always put an end to it in the progress of developement. At the same time, however, it is necessary to guard against the occurrence of any spinal deviations, and irritant frictions may be applied to the spine. Preparations of iron have sometimes appeared to be of use. The description of the disease which is here given will suffice to account for the credit which such numerous remedies have acquired in the cure of chorea; their

use having been coincident with the natural cure. It is not intended to deny that there may be a specific remedy, but only that we at present know not what it is.—*B. and F. Med. Rev.* from *Wochenschrift für die gesammte Heilkunde.* No. 1. 1837.

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41. *Colchicum in Scarlatina.*—William Tait, Esq., now of Edinburgh, lauds in high terms, the efficacy of Colchicum in Scarlatina, and as usual with discoverers of new remedies, has extraordinary success to boast of, from its use. His invariable practice in inflammatory scarlatina "was after administering a purgative and bleeding from the arm, or locally by leeches, as circumstances may require, to begin with the *vinum* colchici, and continue it till all the inflammatory symptoms are subdued; a blister round the throat being all that was necessary to complete the cure. Almost the only gargle used was a little warm water, and the occasional inhalation of vapour, and with this and the treatment above detailed," he "never saw a tonsil or any part of the mouth ulcerated." The dose of colchicum in no case exceeded twelve or fifteen drops every three or four hours," and "this only in robust farm servants; for children of four or six years I began with three or four drops, and decreased the dose, watching its effects, and stopped whenever these were manifested."

Mr. Tait states, that from July 20th, 1836, to May 25th, 1837, he had an opportunity, in a country district where he "then resided, of prescribing for 126 cases of scarlatina, of which number only one died." "That this success," he adds, "was, in a great measure, owing to the use of the colchicum, is evident from the fact, that, in the same district, during the same epidemic, and in the same class of patients, but under a different mode of treatment one out of five or six of all who were affected, died."

It may seem perhaps strange that a statement so positive and apparently conclusive as this, of the efficacy of colchicum in scarlatina, should be wholly deceptive; and yet such is the fact, as may be shown from Mr. Tait's own paper. Thus after stating the truism, that "as scarlet fever presents itself in different forms, one case differing from another in severity, so it may naturally be presumed that it is not expedient to follow the same mode of treatment in every case; and accordingly colchicum ought not to be administered in all cases indiscriminately." He adds, "I administered it [colchicum,] only to thirty-five patients, being little more than one-fourth of those for which I prescribed, but these, *of course*, were of the worst description, being all of the *pure inflammatory type.*" We need not stop to inquire into the soundness of Mr. T.'s logic in ascribing his great success—the loss of only one patient in 126,* to his use of colchicum when he administered it only in one-fourth the cases; or the correctness of his assertion that the pure inflammatory form of scarlatina is the worst; but shall proceed to show, by further quotations, that even in the cases in which colchicum was given this article was not the most efficient remedial mean. Thus Mr. Tait observes, "In most of these [the thirty-five cases] blood-letting, both general and local was had recourse to; in others local bleeding only; and I may here remark, that the effects of the colchicum were always *most apparent after detraction of blood;* but in all the following changes were more or less manifested in a short time after its administration. The pulse was diminished in frequency and force; the palpitation of the heart, which in young subjects was often perceptible to the eye, subsided; the inflammation and pain of the throat were alleviated; and the patient often expressed himself 'much better.' Vomiting was excited in a few cases but as this seemed always to be followed by an improvement in the state of the tonsils, and generally abated after the rejection of a quantity of bile, it was never found necessary to interrupt the use of the medicine. The bowels were generally more or less purged, and the improvement was always so sudden and marked, after a free discharge of dark bilious stools, that I always considered my patient out of danger the moment they appeared. In some cases, where blood-letting was not premised, these effects were not so easily produced, two days having elapsed in one case before any change was observable."

It is unnecessary to point out in detail the errors in Mr. Tait's reasoning; they

*Mr. Tait does not inform us whether the one death occurred among the ninety-one cases in which the colchicum was not administered, or among the thirty-five in which it was.

are so apparent one xamination, that it is sufficient to invite attention to the quotations, and the reader will at once perceive how inconclusive are the conclusions. Indeed, to have noticed Mr. Tait at all may seem like breaking a fly on the wheel; but his loose mode of reasoning is so common a one in medicine, and so many have been deceived by equally incorrect statements, from a want of habit of careful investigation, or from a willingness to receive statements without examination, that we have thought it might be productive of benefit to hold this paper up as an example. So numerous are the sources of error in reasoning from what is called *experience* in medicine, even when the observer is *honest* and *competent*, that we cannot be too careful in forming, or adopting conclusions, or too rigid in exacting the most minute histories of cases from which inferences are to be derived.

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42. *Thymic Asthma.*—The *Lancet* (January 13, 1838,) contains an interesting memoir, by Dr. Hachmann, translated from the *Zeitschrift fur die gesammte Medicin*, (No. 7, 1837,) on this disease. We transfer it to our pages, as it forms a valuable complement to the observations we have already given on the subject.

"Infantile, or thymic asthma, generally commences in so gentle and insidious a manner, that the child's attendants, unless very careful, overlook the first paroxysms.

"These manifest themselves in the following manner. The child suddenly awakens with a peculiar piping cry, which has some resemblance to the suffocative inspiration of hooping-cough, but is much shorter, and disappears again instantaneously. If the child be examined closely it will be found that his respiration is suspended during the access, or that he makes violent efforts to draw in the air through the narrowed glottis, a circumstance which produces the peculiar tone. The face also is moderately flushed; the eyes glassy; the child lies for a few seconds, as if overwhelmed with terror, and then emits a short low cry. The access has now terminated, and the recovery from it is prompt. The breathing quickly assumes its normal character, and the infant takes to the breast with avidity; the pulse and temperature of the skin are now quite natural; there is no cough; in a word, the child appears perfectly healthy. At first the paroxysms commonly occur during sleep, and appear at lengthened intervals, according as the disease is more or less acute; they gradually, however, occur more frequently during the day, especially when the infant is vexed, coughs, cries, or endeavours to drink. The respiration is now suddenly suspended; the face becomes of a dark-red colour, and fixed appearance, the body stiff, the fingers contracted; the child draws several short, crowing inspirations through the narrowed glottis, and the fit terminates with acute cries. The secondary effects of the paroxysms now begin to manifest themselves; after each fit the infant, instead of quickly recovering, as formerly, lies in a stupid, sleepy state, for some time; the fæces and urine pass away involuntarily. As the disease advances, the fits become more numerous, and in one case, where the mother watched narrowly every movement of her child, I have counted as many as fifty in a single day. In this acute stage of the disease the respiration is totally suspended after one or more short, crowing inspirations; the whole body is affected with tetanic convulsion; the arms are stiff, and the fingers strongly flexed on the palms of the hands; the face is expressive of the highest degree of suffering, and the complexion changes rapidly from red to blue. These paroxysms come on suddenly, without any prodromes, and disappear in a minute or two.

"More frequently, however, they change into what Caspari has designated the second stage of the disease. The affection which has hitherto been confined to the branches of the par vagum, now extends to the brain and spinal marrow. To the symptoms already described of spasm of the glottis, are joined general convulsions. The little patient is now also attacked by paroxysms of asthma, which commence with the peculiar symptoms just noticed, but soon terminate in convulsions which it is impossible to distinguish from the ordinary convulsions attacking children. The scene is thus changed, and the patient exhibits the effects of the disease after the disappearance of the fit; he lies dull and immoveable in bed, with violent fever, and a hard quick pulse; the skin is often covered with a profuse perspiration; he slumbers continually in a disturbed sleep, with half-closed eyes. The disease has now reached its acme, and soon terminates either in death or in convalescence. In the latter case the fits of asthma and convulsions gradually decline, the fever is mitigated, the sleep more calm, the general

convulsions no longer seize the child, who begins to recover its appetite; the breathing daily becomes more free, and is commonly restored to its normal condition in the course of a week.

"The duration of the stage of convalescence varies according to the age and condition of the child attacked, its constitution, &c.

"When the disease is to terminate fatally, the paroxysms of asthma and convulsion are repeated at shorter intervals, the fever becomes more violent, the pulse very quick, small and contracted; the child's body is constantly covered with sweat, and it sinks at last in a state of exhaustion or coma.

"The duration of the whole disease is various. According to Caspari the first stage may last from six to eight weeks; from my own experience I should say that it varies from eight days to four or six weeks, or even three and four months. The duration of the second stage is, of course, shorter, and seldom exceeds fourteen days; so that, as a general rule, we may say that the complaint seldom terminates before six or ten weeks.

"Amongst the most remarkable and constant of the symptoms of this disease, Kopp mentions the protrusion of the tongue between the gums, but I have not remarked its existence in all the cases which fell under my notice.

"The pathological anatomy of thymic asthma has been variously described by different writers. Kopp found the thymic body enlarged in every case, but sound in structure; the large lungs were of a brown-red colour, and highly congested, the heart soft, its foramen ovale open.

"Eck also found hypertrophy of the thymus gland, which compressed the subjacent lungs; the brain, lungs, and respiratory apparatus appeared normal; the heart was healthy, but its right ventricle appeared soft and collapsed.

"Dr. Velsen has likewise found the thymus gland remarkably large, extending to the extremity of the sternum, four inches long, and weighing an ounce, but sound in structure.

"Rullman found the brain congested; the larynx and air-tubes in a normal state; the thymus sound, but enlarged; the lungs and right side of the heart filled with blood.

"In a case mentioned by Kornmaul, the enlarged thymus weighed 840 grains; the lungs and heart were healthy; the foramen ovale open.

"Brück and Pitschaft have likewise found the thymus gland enlarged.

"In a case observed by Caspari, the spinal marrow was pale and firm; the membrane sound; the sinuses of the brain full of dark fluid blood; the substance of that organ excessively softened; the phrenic nerve harder than in the normal state; the vagus softened like the brain; the lungs emphysematous and crepitant; the trachea and bronchi of a dark-red colour; the thymus gland of a round shape, and nearly as large as a hen's egg.

"On the other hand, Pagenstecher found the organs contained in the region of the neck in a normal condition; the thymus gland, in other respects natural, weighed only 102 grains; the lungs were healthy; the heart enlarged, and the right ventricle, as well as the principal veins, were much distended with blood.

"Marsh has observed similar appearances in two cases. In the first the abdominal and thoracic viscera were healthy, as also was the lining membrane of the larynx, trachea, and bronchi; the ventricles of the brain were full of fluid. In the second there was considerable congestion of the brain, which was healthy in structure; the uvula was elongated; the tonsils slightly enlarged; the glottis extremely narrowed, but its lining membrane, together with that of the air-passages, normal, the lungs and right side of the heart filled with blood. On examining the glottis the following day it was found to have recovered its natural diameters. In two cases mentioned by Pagenstecher, the chordæ vocales, and in one the epiglottis, were excessively softened. The post-mortem examinations made by Dr. Ley, led him to conclude that enlargement of the cervical and bronchial glands constituted a principal element of the disease. This circumstance has been alluded to by P. J. Frank, who says, 'in asthmate, ut nominant, puerili, glandulas bronchiales preter sanitatis modum, maxime, vero thymum insigniter tumefactum invenerunt anatomici.'

"From the preceding sketch of the morbid anatomy of this disease, it follows that no constant change in the respirator organs, or brain and nervous system, has as yet been discovered to explain the cause of infantile asthma.

"Although the symptoms of this asthma are so peculiar and constant, that it

can with difficulty be mistaken for any other complaint, yet there are a few which have been confounded with it by superficial observers.

"1. Cyanosis. This disease is to be distinguished from the thymic asthma by the following symptoms:—First. Cyanosis is commonly a congenital disease, and is developed within the first week after birth; whereas infantile asthma attacks children who were before perfectly healthy, at the period of dentition, about the fourth, fifth, or seventh month, or even later. Second. The fits of suffocation which occur in cyanosis are longer, commonly accompanied by cough, during which the whole body of the child becomes blue.

"In infantile asthma the paroxysm is momentary, and consists generally of from six to eight fits of crowing inspiration, without any cough, or blueness of the face; in the more acute cases the respiration is totally suspended for a few seconds, a phenomenon not observed in cyanosis; finally, in this latter disease the remissions which characterize infantile asthma are not observed.

"2. With *laryngitis* the disease in question has nothing common, except the fits of suffocation; it is distinguished from laryngitis by the absence of acute febrile symptoms; of the croupy cough and dyspnœa. Croup is a highly acute disease, whereas infantile asthma is commonly protracted to several weeks.

"3. I have never had occasion to observe Millar's asthma, and cannot, therefore, speak from experience of the differences between it and thymic asthma.

"4. The diagnosis of the latter disease, however, becomes more difficult when it has passed to the second stage, with general convulsions, febrile heat of the skin, and acceleration of the pulse, &c. Here it bears much resemblance to hydrocephalus, and we can hence understand why some of the English physicians, Clarke in particular, have placed the seat of the disease in the brain, and denominated it cerebral croup. The history of the two complaints, if accurately obtained, will enable the practitioner to distinguish between them. In infantile asthma the symptoms of the congestive and inflammatory stages, peculiar to the hydrocephalus, are necessarily absent. The convulsions in this latter affection are accompanied with coma, partial paralysis, and amaurosis. In asthma, on the contrary, the functions are, in a great measure, recovered during the intervals of the fits.

"The opinions which have been delivered by authors concerning the ætiology of this disease, are very various; some referring it to organic, others to functional derangement. Kopp was led, as a result of the post-mortem examinations which he made, to consider enlargement of the thymus gland as the cause of infantile asthma, by interrupting the circulation through the heart and lungs; several other physicians, Rullman, Velsen, Pitschaft, and Montgomery, are of the same opinion. This view is, however, founded on a limited number of observations; besides, in a number of cases no abnormal change of the thymus gland has been discovered; on the contrary, Pagenstecher describes the case of a child in whom the gland, instead of weighing 160 to 180 grains, as it usually does, did not weigh more than 102. The hypertrophy of the gland must, therefore, be considered as a co-existing lesion, and not as the cause of thymus asthma; indeed, it is more probably a consequence of the affection. There are several cases on record in which the gland is described as being much enlarged, without having produced any disturbance of the respiratory apparatus.

"The next theory to be noticed is that which attributes the symptoms of thymic asthma to spasm of the glottis. This theory has been chiefly adopted by the English physicians, as Clarke, Marsh, Newton, North, and Robertson; in Germany its chief supporters are Caspari, Pagenstecher, and Rösch. The period at which the disease usually commences, viz: that of dentition, is a point in the history of the affection which is well worthy of attention. Hüfeland, and other German writers, have shown the great influence of developementary changes in infancy, in the production of disease, and the facts which they have brought to light, induce me to consider infantile asthma as a nervous disorder, dependant on the developement of the subject in which it occurs.

"Infantile asthma generally makes its appearance at the period of the first dentition, or about the fifth, seventh, or eighth month; it may occur later, but I have never seen it in the third year; and it certainly attacks children within the first year more frequently than those who are more than twelve months of age. Strong and well-formed children are as often attacked as the weakly, but scrofulous and

rachitic children appear to me to be predisposed to this affection beyond all others.

"The prognosis is not a favourable one,—all physicians are agreed that infantile asthma is a highly dangerous affection. North, indeed, affirms, that he has not lost a single patient by it; on the other hand, of eighteen cases treated by Pagenstecher, eleven died during the paroxysms; two of secondary affections, while only five recovered. Of sixteen cases which fell under my observation, only two died; the remaining thirteen recovered.

"The treatment of thymic asthma will naturally depend on the view which may be taken of the nature of the disease.

"Kopp recommends small doses of calomel continued for a considerable length of time, as the chief remedy in this disease; next in importance to calomel, he advises the use of small doses of ipecacuanha, œthiop's mineral, extract of cicuta, and, when general convulsions set in, the ammoniated copper; he also establishes an issue over the region of the sternum, and keeps it open for a length of time. Caspari, who distinguishes infantile asthma into two forms, the catarrhal and the spasmodic, employs the antiphlogistic method in the treatment of the first species; a few leeches to the chest, four grains of calomel a day, and irritants applied to the integuments of the chest, or occiput, he has found to be extremely useful. When the convulsive attacks are very severe, he gives four grains of musk; should anything approaching to coma supervene, he places a few leeches on the head, or along the spine, and joins assafœtida to the musk. The convulsive species is, according to his experience, as difficult to treat as confirmed epilepsy.

"Pagenstecher regards the regulation of the nutritive functions as the first and most important indication; for this purpose, when the child is strong, he endeavours to produce derivation to the intestinal canal, by means of calomel; as a specific against the paroxysms of convulsion, he places the greatest reliance on the hydrocyanite of zinc, in doses of one-half to one grain, continued from four to six days.

"Roesch recommends antispasmodics in general, and particularly digitalis; North, calomel; Marsh advises a change of air, gentle tonics, with antispasmodics according to circumstances, enemata of the infusion of tobacco, &c.

"My method of treating the disease is extremely simple; but although it has been much more successful than that of any of my predecessors, I cannot venture to ascribe its results to the nature of the treatment alone. In the first stage of the disease, when the fits appear to consist merely in spasm of the glottis, I give the flowers of zinc, with extract of lettuce, and small doses of ipecacuanha, three or four times a day. When the children are strong and lusty, I add small doses of calomel; but when any appearance of a nervous temperament exists, I do not order calomel; should any disorder of the digestive organs appear to be present, I administer a laxative of rhubarb with carbonate of soda; and if the air-passages seem obstructed with mucus, I have found a gentle emetic of benefit. In cases of children, of evidently scrofulous habit, or for such as are weakly, ill-nourished, &c., I combine the remedies already mentioned, with small quantities of the carbonate of iron; here the diet must be regulated with the greatest care; the food should be light, simple, and of easy digestion, and exercise in mild, fresh air, is of the greatest value.

"When the physician has an opportunity of treating the disease at an early stage, the use of the remedies just indicated will produce a remission of the fits, which gradually decline and disappear; great attention, however, must be paid at each period of developement, and especially at the cutting of new teeth, when the paroxysms are apt to recur.

"Sometimes the malady has made a very rapid progress, or is of long duration, before the physician has been called in; the children labour under general convulsions, and febrile symptoms, of greater or less intensity, have made their appearance. Under such circumstances a few leeches should immediately be applied to the head, and some mild cooling powders administered internally so as to produce one or two motions daily.

"The asthmatic and general convulsive attacks are to be combatted by powerful antispasmodics, of which I have found the most efficacious to be musk, combined, according to circumstances, with flowers of zinc, calomel, digitalis, or

camphor; these may be aided by enemata containing vinegar, or assafœtida, or, according to the advice of the English physicians, infusion of tobacco. As the fits become lighter, these means may be gradually discontinued, but it will be well to go on with the use of the musk in diminished doses for some time longer. The best strengthener, during the period of convalescence, is free exposure to mild and fresh air.

"The exclusive antiphlogistic treatment seems to me to be contraindicated by the temperament of the children in whom infantile asthma generally occurs; it has never produced any benefit in my hands, nor do I consider the use of what are called antiscrofulous remedies, of greater value, unless combined with the antispasmodics already mentioned, than which hyoscyamus, belladonna, and the sulphuret of potass, appear to be much less efficacious.

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43. *Treatment of Typhus Fever by Purgatives.*—M. Andral some time since made a report to the French Academy of Medicine, on a work by M. De Larroque, on the treatment of Typhoid Fever by "Purgatives." This report, or rather the subject of it, gave rise to much discussion. The treatment consists in administering a *bottle of Seidlitz water daily* as long as the pyrexia lasts. If this disagrees with the patient, other laxatives, as calomel, cream of tartar, castor oil, &c., may be substituted. The beverage is either lemonade or rice water. Upon the whole, this treament would seem, at least in mild cases, to have been followed by the average success; which appears to us to prove nothing more than that a large proportion of mild cases of typhoid fever, if not disturbed in their progress by perturbating remedies, will get well.

It is somewhat amusing to find our esteemed cotemporary, the Medico-Chirugical Review, charging the French Academicians with ignorance or unfairness, in not once alluding to the labours of Dr. Hamilton in this department of medical practice. There is as little similarity between the so named purgative practice of M. De Larroque, Piedagnel, &c., and the purgative practice of Hamilton as there is between the infinitesimal doses of the homœopaths and the transcendentally enormous doses of an eminent western Professor.

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44. *On the treatment of Cholera.* By Robert J. Graves, M. D.—As spasmodic cholera seems likely to fix itself permanently in Europe, and has lost nothing of its original malignity, every practitioner is imperatively called on to communicate whatever he thinks may prove serviceable in its treatment. This disease prevailed epidemically to a fearful extent in Dublin in 1832 and 1834. In the former year my practice among cholera patients was very extensive, but by no means successful. In 1834, about the latter end of July, when the disease was raging most violently among the middling and better ranks of society, and at a time when I had very frequent opportunities of treating it, too often had I to regret the inefficacy of the means employed, and though aided by the advice of the most eminent members of the profession in Dublin, too often had I to witness the loss of cases, not apparently very dangerous when they began, and which seemed to leave full time for the employment of remedies, if such were known. Under these circumstances I lost an intimate and highly esteemed friend, Surgeon Ryan, of Camden-street. He was a young man, of vigorous health, and the late Mr. M'Namara, and I saw him many hours before any symptoms of collapse had set in; calomel and opium, blisters, frictions, sinapisms, stimulants, and all the most approved medicines, were diligently tried, but in vain; and from that moment I resolved to lay aside the mercurial treatment, which had so very often disappointed my expectations, although pushed to the greatest extent, and applied with the greatest activity and perseverance. During the preceding months of May and June, I had treated several cases of diarrhœa in fever with large doses of the acetate of lead, according to Dr. Bardsley's plan, and I had had frequent opportunities of admiring the efficacy of this salt in checking profuse alvine discharges. Just as Mr. Ryan died, and while my mind was filled with regret at our failure in his case, I was called by Dr. Percival Hunt to see a lady in Nassau-street, labouring under dysentery; I advised the free use of acetate of lead, and with marked success. Immediately after, I saw a case of cholera still in the stage of premonitory diarrhœa, or rather just passing from the bowel complaint into the fully formed disease. I tried the acetate of lead boldly, and with the happiest success. Thus encouraged

I applied this new method of treatment in every case to which I was called, and I was employed both night and day in visiting cholera patients, and every hour gave me additional proofs of the efficacy of the remedy. My formula was as follows:—

℞ Acetatis Plumbi ℈j.; Opii., gr. j. ℳ. fiat secundum artem massa, in pilul. xii. dividenda.

The premonitory diarrhœa has almost invariably stopped by taking one of these pills, at first every hour, and as the stools became less frequent, every third or sixth hour, according to circumstances. When the vomiting, spasms, and the state of collapse had begun, it was necessary to give a pill every quarter of an hour: after a couple of hours the effect of the pills became perceptible, in a diminution of the serous evacuations upwards and downwards; then the pills were given only every hour, and as the symptoms yielded they were given less and less frequently, and could in general be laid aside altogether before twenty-four hours. In some it was found necessary to give the acetate of lead in solution, combined with a little vinegar and minute doses of acetate of morphia. Minute doses of opium were useful; any thing of large doses hurtful. Mr. Parr, the able and respected apothecary of the Meath Hospital, was saved by acetate of lead, after the usual astringents, combined with large doses of opium, had been fully tried. He was found by me to be sensibly under the narcotic influence of opium, but the peculiar symptoms of cholera had not been thereby checked. Many took more than forty grains of the acetate of lead in twenty-four hours; it usually darkened, or even blackened, the alvine discharges, before they ceased altogether. Were I to enumerate all the cases of violent cholera that yielded to this treatment, I would be led into a tedious but not an uninstructive detail; I shall, therefore, merely refer to some of the most malignant cases, where the recovery of the patient was undoubtedly owing to the bold exhibition of acetate of lead, and where the success of this practice was acknowledged by witnesses the most unexceptionable and competent.

Mr. Peile, Deputy Inspector General of Hospitals, and Staff Surgeon Colclough, will not readily forget the apparently hopeless case of an assistant surgeon in the army, whose life was thus saved. Dr. Marsh was so struck with the effects of this medicine in the case of a young gentleman residing in the house of the Rev. Mr. Bermingham, Charlemount Mall, that he did not hesitate to my trying the same remedy in the case of Mr. Kerin, then President of the College of Surgeons, whose case seemed to be desperate. Mr. Maturin, son of the celebrated writer, was attacked in the most violent manner, and, indeed, neither I, Mr. M'Namara, nor Mr. King, had any hopes of his recovery; yet he too was saved. Nothing could be more appalling than the state of Mr. Wilson, of Charlemount-street. The effects of the acetate of lead in his case were so striking, that Mr. Mulock immediately adopted the plan of treatment, and he assures me that he has thereby saved a great number of very bad cases. Dr. Davis, surgeon of the 18th, or Royal Irish regiment of foot, witnessed with extreme interest the acetate of lead tried, and tried successfully, in a very bad case at the Richmond barrack. Equally successful results followed the trial of this remedy in the hands of other practitioners, both in Dublin and various towns in Ireland, during the epidemic of 1834.

After I found out the benefits resulting from the employment of acetate of lead, I no longer desponded when called to cases of cholera, knowing that in the great majority of instances the disease would yield. Of course there are cases of cholera which admit of no treatment, and which an experienced eye will at once recognise as fatal; they occur generally among the aged, or the very young, and are fatal in the course of a few hours, often without any premonitory diarrhœa. But this constitutes no valid objection to the practice; for in what disease do not cases occur which baffle all our efforts? Fever, scarlatina, pneumonia, croup, inflammation of the brain, of the bowels, and many other affections, occasionally exhibit a degree of intensity which renders them as intractable, and as speedily destructive, as even the worst cases of cholera. But does this occasional intensity and occasional intractability, of certain cases, lead us to regard the diseases above enumerated as beyond the reach of medicine and the control of the physician? By no means; for although we feel our efforts in the particular cases specified to be unavailing, yet we also feel that where the intensity of these diseases is less, we can save numerous lives that would otherwise be lost; so it is, likewise, with cholera.

I may remark, that since 1834, cases of true Asiatic cholera occur sporadically every now and then in Dublin, as I believe happens also in most large towns in Europe, once visited by this pestilential epidemic. Of these I have lately seen two decided cases; both were likewise visited by Mr. Mansfield. Both were saved; and yet one was so violent as to have reduced a powerful young man to a state apparently hopeless, in the course of three hours.

I cannot conclude without imploring the profession, in every part of the world where cholera prevails, to give my plan of treatment a fair trial, for I feel confident of its efficacy.—*London Medical Gazette*, Oct. 1837.

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45. *On Encephalic Irritation.* By M. Piorry.—"The knowledge of diseases, essentially founded on the anatomy and physiology of man in health and in disease, has made in our days indisputable progress. We have already discovered, in a series of determinate symptoms, the primitive source of the general phenomena which are manifested. We have seen that excitation, irritation, congestion, phlogosis—limited usually to one organ, sometimes to one apparatus, more rarely to one system, and least frequently still to several tissues viewed as a whole—are the local causes of constitutional disturbances. Such an improved etiology has necessarily led to an improved method of treating diseases. We must confess, however, that the success of our treatment has by no means corresponded with our advances in pathological anatomy; and certainly in no disease does this remark hold so true as in the malady to which we have given the name of Infantile encephalic irritation, and which has been by different writers called Hydrocephalus acutus, cerebral Fever of infants, Arachnitis, &c. &c. This very diversity of nomenclature is a sufficient proof that the knowledge of this disease is still very imperfect.

Some writers regard it as an essential febrile affection, usually of an ataxic or malignant type; and hence they have denominated it as infantile cerebral fever, a name which M. Gendrin has of late years wished to restore.

Cullen, as is well known, classed it among his apoplexies; and Pinel treated of it under the head of dropsies, and retained the name of *hydrocephale aigue.*

The admirable pathological researches of MM. Lallemand, Rostan, and Martinet have shown how very often it is connected with an inflammation of the arachnoid membrane. M. Piorry, however, confesses that he is far from being satisfied with the doctrine of limiting the disease to a morbid state of the arachnoid membrane alone. He remarks, very justly, that the arachnoid membrane does not seem to exercise much influence on the cerebral functions in a state of health, and that it can be, only by its contact with the brain, that it can affect these functions. If arachnitis is accompanied with delirium, this symptom must be attributed only to the sympathetic, perhaps coexistent, irritation of the cerebral substance; if it is attended with spasmodic contractions, disturbance of the sensual perceptions, &c. the real seat of these morbid phenomena is no doubt in the encephalon itself. The old hypothesis of sensibility being in any way resident in the cerebral membranes is now very justly exploded.

We are thus almost forced to the conclusion that the symptoms of the disease, which has been called arachnitis, are mainly attributable to irritation of the encephalon; and here let it be well remembered, that this irritation may be induced by the diseased states of distant organs as well as by those of the investing membranes of the brain itself.

We thus see the error of designating the series of morbid phenomena, which constitute the disease of acute hydrocephalus, by the name of arachnitis.

A child suffers from indigestion and deranged stomach and bowels: severe headache, convulsions, and delirium follow. Are we to suppose that this child has an attack of arachnitis? Certainly not. It would be absurd to suppose that the stomach irradiated the diseased action on the brain through the medium of its envelopes.

The true interpretation of the case is, that an irritation of the encephalon itself has been induced by sympathy with the disturbed stomach and bowels.

Here is an illustrative case.

A child in the Rue St. Honore, four years of age, and habitually robust and plethoric, became suddenly very ill. He was constantly moaning and crying, had occasional strabismus, and at other times a spasmodically fixed state of the eyeballs, convulsive oscillation of the iris, contractions of the limbs, grinding of

the teeth, and loss of consciousness. The pulse was quick and hard; and the capillaries of the face were highly injected. All these symptoms had come on very rapidly.

M. Piorry discovered that the child had been eating a large quantity of potatoes and other indigestible substances; and, on examining the stomach, he found it distended and tender; on pressing it, nausea was induced. He ordered a quantity of hot water to be given immediately, with the view of exciting vomiting and thus emptying the stomach, and several leeches to be then applied behind the ears.

The symptoms very speedily subsided, and the young patient was as quickly cured as he had been suddenly seized.

The rational interpretation of such a case is to attribute the cephalic symptoms to an irritation—arising probably from a temporary congestion—of the encephalon itself, and surely not of its investing membranes.

The most alarming symptoms, even paralysis itself, may be induced by a mere temporary fulness of the cerebral vessels, and may be as quickly dissipated by appropriate treatment.

This fact is well illustrated in the following case.

Made. la Comtesse de St. M———, residing in the Rue Vivienne, No. 8, is upwards of 70 years of age. Although tried by a succession of the most bitter misfortunes, her disposition is cheerful, her fancy is lively, and her health is on the whole very good, with the exception of occasional attacks of nervous symptoms. She has been long subject to an umbilical hernia, which is but ill kept up, and during the last three years she has had several apoplectic threatenings. After dining upon rather indigestible food one day, she was seized with a difficulty of speech, vertigo, confusion, distortion of the mouth, and powerlessness of the right arm. She soon became quite insensible, and lay in a state of apoplectic stupor, breathing stertorously, and her pulse very slow and full. On examining the abdomen, M. Piorry found the hernia large, distended, and hard. When he attempted to reduce it by firm pressure, the gesture of the patient indicated great suffering. The apoplectic state continued for half an hour; but no sooner was the hernia replaced, than suddenly the patient recovered her speech and consciousness, and soon afterwards all the unpleasant symptoms, physical as well as mental, completely vanished.

M. Piorry alludes to a similar case, which he saw along with Dr. M. Solon, and in which the apoplectic symptoms continued for a quarter of an hour, and then suddenly ceased.

He admits that in many fatal cases, where delirium, cephalalgia, and other cephalic symptoms have prevailed, we usually find traces of arachnitis, while often no lesion of the cerebral substance is discoverable. But he very justly adds, "how frequently too is the arachnoid membrane in such cases found quite healthy, and some distant viscus only exhibits signs of disease?" He therefore reverts to his former position, that there is not a single symptom, that is usually described as indicative of arachnitis, which may not be induced by disturbance of some distant organ, and more especially of some of the abdominal ones.

The cerebral irritation may prove fatal, before any appreciable lesion of structure has had time to be established; and every practical physician knows well how often his prognosis, as to the nature and extent of the morbid change in fatal head affections has but ill accorded with the appearances found on dissection. So true is this, that the cautious practitioner will always hesitate to pronounce, with any degree of assurance, the pathological characters of any cerebral disease.

Besides this source of difficulty, it ought to be ever borne in mind that, in general, dissection reveals to us only the more confirmed and serious morbid lesions, and that it scarcely assists us in ascertaining the earlier and less distinct changes of tissue, such as we may suppose to attend the first stages of a disease. How true is this more especially of cerebral disease! How often do we find no traces at all of morbid action, in cases too which have existed for a great length of time, and which have been accompanied with well-marked and even alarming symptoms?

In reference to the encephalic irritation of infants, Dr. Piorry is of opinion that the most frequent cause of this most insidious and dangerous malady is "une excitation pathologique" of the primæ viæ. Hence the primary importance of cor-

recting such a disorder at its very commencement, and of counteracting its tendency to return by careful attention to diet.

Dentition is also a fruitful source of cerebral disease in infants. The proximity of the seat of pain, the increased action of the blood-vessels, and the general feverishness thus induced, will serve to explain this cause of encephalic irritation.

Internal otitis, or inflammation of the inner ear, has been repeatedly noticed as antecedent to this malady. The same may be said of the sudden retrocession of any eruptive disease on the scalp, of which the following may be taken as an example.

A girl, 13 years of age, had been long affected with tinea of the scalp. She had been once seemingly cured; but it returned with even aggravated severity.

Dr. Piorry succeeded in dissipating it quickly by pursuing a rigid antiphlogistic and emollient treatment, local as well as general. A week or two after this date, she began to suffer a most acute pain over the eyebrows, and this was speedily accompanied with delirium. Fever set in; the carotid arteries beat furiously, the pulse was hard and frequent, the eyes were fixed on the ceiling, there was occasional twitching of the muscles in different parts, the face was alternately flushed and pale, and the bladder ceased to expel its urine. On withdrawing the water by means of the catheter, the young patient was much relieved; the delirium subsided, and intelligence was restored for a few minutes; but soon afterwards the stupor, alternating with convulsions, returned, the pupils became dilated, and the body perfectly motionless. She died on the ninth day after the commencement of the cephalic symptoms.

A dissection was not permitted.

In fine, as to the *causes* of encephalic irritation in infancy, we may state that the large dimensions of the head at this period of life, the tender sensibility of the whole system, the pains and distress of dentition, the developement of the intelligence, the numerous new impressions made on the body, the excitable and easily-deranged state of the primæ viæ, &c.—all these influences combined will very well account for the predisposition of cerebral affections in early life.

With respect to the *symptoms*, it is unnecessary to enter upon a minute description of them. There is one, however, to which M. Piorry directs the attention of the reader with especial earnestness, as being indicative of alarming disease of the brain—he alludes to a certain involuntary rolling of the eyes, followed by a fixed turning of them upwards.

The child keeps the eyes fixed on the ceiling; he seems to be looking at something there, and yet it will be found that he sees nothing. This state lasts for a few minutes. The pupil is usually dilated for the time, and the eyelids are half open. "Before," says M. Piorry, "I commenced the use of lavements of Peruvian bark in such cases, almost all the infants who had exhibited this symptom died."

Another symptom of encephalic disease, which well deserves the careful attention of the physician, is the frequent alternation of the heat and coldness of the surface, and of the flushing and paleness of the face.

This symptom is, however, more frequently observed, and more distinctly marked in inflammation of the medulla spinalis, than even of the encephalon itself.

And now as to the *treatment* of this serious disease.

"In the first part of this memoir," says M. Piorry, "I have related fourteen cases of cerebral affection. In the first five, the fatal course did not seem to be at all arrested by the antiphlogistic and derivative plan of treatment which was pursued.

In the sixth one, this plan was attended with success. In the seventh, the clearing of the stomach by emetics, and then the application of leeches behind the ears proved successful.

In the four following cases, the encephalic disturbance, of long standing, and otherwise remarkable by a more or less distinct intermittence of the symptoms, was speedily removed after the employment of lavements containing Peruvian bark.

In the last three cases—and in these there had been no alternations of heat and cold—the Peruvian bark seemed to have had no effect."

M. Piorry does not, however, at all undervalue the importance, indeed the ne-

cessity, of antiphlogistic measures in most cases of encephalic irritation, more especially during the earlier stages of the disease. The use of leeches, cold to the head, purgatives, diuretics, &c., is quite indispensable.*

It is only when the disease has continued for some time, when the vital powers have been considerably reduced, and above all, *when there is a marked intermittence of the symptoms*—indicated by alternations of heat and chillness of the surface, of flushings and paleness of the face, and of exacerbations and abatements of the convulsions and other symptoms—that he so strongly recommends the use of lavements containing the Peruvian bark.

In alluding to the use of purgatives in encephalic irritation, M. Piorry repeats an observation, which he had previously made, that the disease is very frequently preceded by a slight degree of diarrhœa. He cautions the physician against the unguarded use of purgatives, especially of such as are acrid, under such circumstances. He assures us that he has, oftener than once, seen the cerebral affection become aggravated immediately after the action of such a medicine. The employment of emollient enemata, and a most rigid attention to the diet of the child, are all that is sufficient to correct the state of the bowels. The use of calomel, or of some other preparation of mercury, may be proper, when the intestinal evacuations are slimy, green, and offensive. On the whole, however, M. Piorry greatly prefers the administration of purgatives in the form of enemata.

With respect to blisters in cerebral diseases of children, M. Piorry recommends that they should not be used, until the violence of the feverish symptoms has abated, and until the action of the carotid arteries and of the circulation generally is reduced. All remedies, whose action is attended with so much pain as accompanies vesication, had better be avoided in the earlier stages of the disease.

As to the application of ice, and cold lotions to the head, M. Piorry approves of them on the whole. He, however, very properly remarks, that, whenever the heat of the surface is below the natural standard, and the features are pale and at all shrunk, all such depressing medicaments are to be discontinued.

To revert for a moment to the use of bark injections in cerebral affections, we have already explained the circumstances in which M. Piorry recommends their use—it is only when there is a tendency to intermittence of the diseased action, or to an alternation of heats and chills, excitement and depression of the animal powers. He candidly confesses that he was indebted to M. Hippolite Cloquet for the first hint of this most useful practice.

The four cases, which he has narrated in the present memoir, are, he thinks, quite decisive of the utility of the practice under appropriate circumstances.

He has witnessed its good effects in certain cerebral affections of adults. A man, 50 years of age, was subject, at a certain hour on every alternate day, to attacks of mania with a disposition to commit suicide. All the unpleasant symptoms gave way to the internal use of Peruvian bark.†

M. Piorry has not witnessed good effects from this remedy in any case, where the symptoms have been uniformly continued and have not exhibited any tendency to intermittence.

The following conclusions embody a faithful summary of the doctrines inculcated in M. Piorry's memoir.

1. During the life of a patient, it is impossible to affirm with certainty that he is affected with *arachnitis*, as all the symptoms of this disease are present in a cerebral irritation, which may be induced by sympathy with a distant organ.

2. The symptoms of arachnitis are much more frequently observed in infants and young children, than in adults. We have accounted for this greater frequency, by reference to the large relative size of the head, the process of dentition, the tender and irritable state of the *primæ viæ*, &c. &c.

* The practice recommended by M. Piorry, is more active and depletory than most English physicians will be inclined to adopt. One, or even several venesections, and from 20 to 50 leeches to the head are, in his opinion, the appropriate treatment of the early stages of cerebral congestion in infants.

† Most of our readers will probably recollect the memorable case of periodic insanity in the person of Mr. M'Kerrel, narrated at great length by Dr. Johnson in one of the late numbers of this Review.

3. The eyes being turned upwards and fixed constantly on the ceiling, is one of the most alarming symptoms of cerebral irritation in early life.

4. The primary indication in the treatment of this affection is to discover the organ, whose disturbance has given rise to it.

5. Copious depletions of blood are quite necessary in the early stage of most cases.

6. With respect to the propriety of blood-letting in cerebral irritation, we should not be guided much by the state of the pulse at the wrist, but rather by the force of the pulsations of the carotid arteries. M. Piorry dwells upon this point of practice at very considerable length. He mentions having repeatedly observed that the pulse at the wrist was small and feeble, while the carotid and temporal arteries were beating with great violence. When this state of things exists in the early stage of the disease, we need have no dread of blood-letting, either general, if the child be old enough, or local by means of leeches: in the more advanced stages, when the vital powers have been necessarily much reduced by the continuance of the morbid action as well as by the depressing remedies which have been used, we require to be very cautious in ordering further depletions.

7. After bleeding, we may have recourse to derivative applications; but we should avoid as much as possible those which cause much pain and irritation.

8. In applying ice and cold washes to the head, attention should be paid to the removing of them, whenever the pulse becomes weak and the surface of the body chilled.

9. The symptoms of infantile encephalic irritation exhibit, in very many cases, a decided tendency to intermittence, indicated by the alternations of flushing and paleness of the face, heat and chills of the skin, &c.

10. In all such cases the use of Peruvian bark will probably be attended with benefit. The best form to administer it is in enemata. From two scruples to two drachms may be administered at a time.

M. Piorry has not found quinine nearly so efficacious as the bark in substance.

11. The best time for the administration of the bark enemata is when the face is pale, and the system is low and languid.

12. The suspected existence of gastric or enteric irritation is not to deter the physician from the exhibition of bark.—*De l'Irritation Encephalique des Enfans, by P. A. Piorry, published in the Repertoire Medico-Chirurgical, Bruxelles, Aout,* 1837.

Remarks.—The practical physician will no doubt be much pleased with the preceding remarks on a very frequent and very dangerous malady of infants from so talented an observer as M. Piorry. We regret to find no allusion, in his memoir, to the use of opium and carbonate of ammonia in the latter stages of certain cases of cephalic irritation, or what has been too frequently called, with little or no discrimination, hydrocephalus acutus. We have often employed them with great benefit, when all other remedies, and more especially all of a depressing nature, would have been positively injurious.

It requires indeed, a nice discrimination of symptoms, and not a little tact as well as decision of practice, to determine the cases in which these powerful remedies ought to be employed. In our own experience we have been guided rather by the state of the child during its sleep, than by the presence of any particular symptoms.

When the breathing and the pulse are regular and equable, though weak and rapid, when the power of deglutition remains perfect, and when the decubitus or posture of the infant in bed is easy and natural, the cautious administration of opium, combined with ammoniacal salt, will often save the patient. The diet, at the same time, must be made nutritious but light. Nothing is so good, or so easily given as beef-tea. The feet and bowels should be kept warm; the head should not be raised high by pillows, and above all the child should not upon any consideration be lifted up, as a fatal syncope is apt to supervene. If there is the slightest tendency to diarrhœa, it should be checked at once by opiate enemata.—*Med. Chirurg. Review*, January, 1838.

SURGICAL PATHOLOGY AND OPERATIVE SURGERY.

46. *Perineal Hernia,—abscess between the rectum and vagina.*—A very interesting case of this has been related by G. T. Hayden, Esq., in the *Lancet*, (Nov. 4; 1837.)—"Mrs. B——, ætat 32, generally healthy, pelvis wide, was safely delivered of her third child, on the 2nd of February, 1837. Labour in all respects natural. A small, soft tumour was perceived at this time, in the vagina, which, from its figure and position, was then supposed to be a polypus.

Six weeks after confinement, in consultation with Messrs. Colles and Wilmot, it was pronounced that the tumour was not a polypus, but a hernia, descending between the rectum and vagina, upon the *right side*, of the size and figure of a small pear, reducible after long-continued pressure; the aperture through which it passed feeling hard, defined, slitlike, and immediately contiguous to the *side* of the pelvis. It was our opinion that the only means of effectually preventing the descent of the hernia, would be by adapting a springed instrument, which would press on the internal opening, that had permitted the descent of the tumour.

Subsequently to this consultation Mrs. B—— was, from exposure to cold, seized with peritonitis, which, although it yielded to the usual means, yet considerable uneasiness remained in the region of the rectum. Leeches, anodyne enemata, hip-bath, calomel, and antimonials, were employed with but temporary alleviation of her sufferings. After ten days of the most excruciating distress, increased to the greatest intensity when at stool, Mr. H. discovered, by introducing one index-finger into the vagina, the other into the rectum, that a considerable tumour occupied the interval between the former and the latter, which conveyed a pretty decided feeling of fluctuation; pain greatly aggravated by the pressure of his fingers. The suffering and difficulty experienced during defecation were now readily accounted for. I subsequently introduced the largest sized bougie into the uterus, with great ease, as the os uteri was so patalous that it would admit the point of the finger. This tumour was quite unconnected with the hernia beforementioned.

Mrs. B—— was now again seen by Mr. Colles, who agreed with Mr. H. in opinion, as to the existence of an abscess between the rectum and vagina. This poor lady besought her physicians to perform any operation that would relieve her from her present agonizing sufferings.

It was determined to introduce the exploratory needle into the tumour from the vagina; unequivocal evidence of matter was afforded by this means. Mr. H. next introduced a lancet, conveyed upon his index-finger, through the posterior wall of the vagina into the tumour; but, to his no small surprise and disappointment, the saucer was removed from the os externum without being soiled with discharge. On visiting the patient next morning, he was informed that her sufferings during the preceding night were just as severe as ever. He now introduced a long and large-sized probe into the opening that had been made by the lancet; but still pus did not flow, although this instrument, on removal, was smeared with matter. Conceiving that the contents of the abscess were obstructed by the interposition of the parts in a valvular-like way, Mr. H. determined upon using a trocar and canula in the ring. When he called upon Mrs. B——, he learned that in about an hour after he had introduced the probe, on rising to pass water, nearly a pint of well-formed pus was discharged, at once, through the vagina, to the no small relief of his patient. Matter continued to flow, for upwards of ten days, from the abscess. Hectic symptoms now set in, which were removed by country air and tonics.

In less than three months this lady was restored to her usual good health. Some fulness and hardness remained on the site of the abscess. Menstruation as regular as ever. The hernia had by this period increased in size.

Under the superintendence of Mr. L'Estrange, an instrument, on the principle of a truss, was constructed, which completely keeps the hernia *reduced*, without producing any marked uneasiness by its pressure. This ingenious instrument consists of a concave piece of tin, padded, and adapted to the right hip, between the anterior and spinous process of ilium and great trochanter. A girth passes from this around the back, and corresponding part of the left hip, which is fastened with buckles to the other extremity, so as to steady the padded tin. Fixed

to the latter is a spring, covered with leather, and oiled silk, which passes downwards and inwards to the vulva. The internal extremity is attached, by a screw, to a shank of wood; the latter is adapted to a globular piece of the same substance, like a pessary, which presses directly upon the opening through which the hernia had descended, and in a direction upwards, backwards and outwards.

47. *Dislocation of the Humerus outwards and backwards on the Dorsum of the Scapula.*—Dr. Charles Wilson, of Kelso, relates in the *Edinburgh Medical and Surgical Journal* for July last, a case of this very rare form of dislocation. The subject of it was a farm servant, 50 years of age, of a spare but muscular frame. Two days previously to applying to Dr. Wilson, "when he was lifting a plough for the purpose of putting it into a cart, he fell under the weight, which is very considerable, and having been rolled over during the act of falling, he received at that time the injury complained of, which was at once attended by severe pain and inability to move the arm. His own impression was that the bone was fractured; but having been persuaded by a person pretending to some skill in such matters, that the case was only a severe bruise, he made no application for surgical assistance till to-day, (28th Nov.) when, being still unable to use the arm, and having suffered so much from pain as to have had no sleep during the two nights which had elapsed, he came to Kelso for advice regarding it.

"On examining the shoulder there appeared to be a considerable degree of swelling surrounding the whole articulation, with a more particularly marked prominence towards the outer portion of the dorsum of the scapula, at which part the tumefaction was very great, and gave the shoulder a singularly distorted look. The arm was fixed in a direction downwards, outwards, and slightly forwards, so that the line of the humerus proceeded in a direction nearly parallel with that of the lower margin of the scapular portion of the deltoid muscle. The whole shoulder appeared to be depressed lower than that of the opposite side, and the fore-arm was kept flexed. On making pressure immediately below the acromion process, and especially at its anterior part, a vacancy was felt in the situation which ought to have been occupied by the head of the bone in the glenoid cavity; and, on rotating the humerus, the axis of rotation was distinctly perceived to proceed in a line farther back than the proper centre of the articulation, and in the direction rather of the tumour on the back of the scapula; at which part, in fact, on making pressure with the left hand, and continuing the rotation, the head of the bone was readily, and with the greatest distinctness, felt to revolve. The acromion process itself had suffered no injury, and there was no farther appearance of displacement about the joint, with the exception that the neck of the scapula and the glenoid cavity appeared to have been pushed somewhat forwards towards the inner part of the anterior boundary of the axilla, so as to be felt, on pressure with the fingers under the acromial end of the clavicle, more readily than is usual in ordinary luxations of the humerus, where the head of the bone passes downwards into the hollow of the axilla. There was some ecchymosis on the integuments covering the scapula, and a slight abrasion of the skin immediately below the elbow."

It thus seemed evident that the head of the humerus had escaped at the outer and lower part of the glenoid cavity, and was lodged on the *dorsum scapulæ*, at the exterior part of the infra-spinosus fossa, and close to the root of the acromion process; but as the possibility of this kind of dislocation has been denied by some surgeons, Mr. W. submitted the case to the inspection of Mr. Robertson, R. N., who fully concurred in the diagnosis.

Reduction was effected by placing the heel of the surgeon in the axilla, and applying extension by a towel tied around the arm above the elbow, as frequently practised in the common luxation downwards. With a single effort the bone leapt into its place. The patient felt immediate relief, and the shoulder was restored to its normal shape.

"The displacement," observes Dr. W., "in a case of this description, could only be produced when the arm was uplifted across the chest, and by a force pressing it in a direction downwards, outwards, and backwards. As soon as the dislocation was effected, the arm would be drawn forcibly towards the side, by the prompt action of the *pectoralis major*, *latissimus dorsi* and *teres major* muscles, and would assume at that time the position which it afterwards retained, the external

deformity arising from which I have already described as characterizing the injury. The direction of the arm, it has been stated, was in a line downwards, outwards, and slightly forwards; and the head of the bone appeared to be situated at the root of the acromion process,—behind the glenoid cavity, therefore, and above that part of it where the laceration of the capsule had taken place, and at which alone its reduction into the socket could be effected. In this position the displaced part would be covered by the scapular portion of the deltoid, and by the outer portions of the *infra-spinatus*, and *teres minor* muscles; and the parts in the state of the greatest tension would be the *pectoralis major* and *subscapularis* muscles, the distance between their points of origin and insertion being increased by the distortion resulting from the accident. The arm would be directed outwards by the action of the deltoid, and slightly forwards by that of the *pectoralis major* and *coraco-brachialis*, the latter of which muscles would also suffer a degree of tension from the injury. It would be prevented from proceeding farther forwards, and inwards across the chest, by the contact of the neck of the humerus with the inferior costa of the scapula and the neck of that bone; and, lastly, the head of the humerus would be retained in its position at the root of the acromion, by the tension of the integuments over it, and by the conjoined action of the *supra-spinatus* and others of the muscles proceeding from the scapula to the arm and fore-arm. It is probable that it is in this way that the bone will be ordinarily directed and fixed in the luxations backwards, though it might easily happen that the arm should be placed more closely to the side, and in a line more nearly parallel with the axis of the trunk, in a case where the traction caused at first by the *latissimus dorsi* and *teres major* should chance to proceed a little farther than it did in this instance; a circumstance which, it appears to me, would be likely to occur in the case of this accident happening to an individual, in whom, from the shortness of his clavicles, and the consequent forward and somewhat lateral position of the *scapulæ*, (constituting the disposition of the chest and shoulders termed sometimes the "poitrine ailée") the former of these muscles might be supposed to act with increased advantage in antagonizing its opponent on the anterior part of the chest, the action of which would otherwise usually predominate, from the greater degree of tension to which it is subjected by the nature of the displacement."

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48. *A peculiar and undescribed injury of the Shoulder.* By G. J. Guthrie.—J. Cadman, a plasterer by trade, whilst employed in his daily work, felt the ladder on which he stood turn, and, after some effort to save himself, he fell with it, his left elbow striking the ground, whilst his shoulder rested against one of the steps of the ladder, in a way he cannot distinctly explain. He felt that he had sustain-a severe injury in the shoulder, and the elbow was much grazed. He was brought immediately to the hospital, but there was so much swelling that the house-surgeon, Mr. Dasent, could not make out the nature of the injury, and sent to me. I saw him about three hours after the accident, and the most remarkable and striking appearance was a fold, or pucker, of the skin, about the size of the half of half-a-crown, situated over the middle of the pectoral muscle, where it forms the anterior fold of the axilla; a hard substance could be felt below this, and extending above it towards the coracoid process, which could not be distinguished on account of the swelling, and it had been supposed that this substance was the coracoid process broken off; the head of the humerus could be very indistinctly felt on the outer part of the glenoid cavity, or something like it; the arm was very moveable in every direction, and the elbow could be brought close to the side, and made to strike the ribs without difficulty. I decided that it was a fracture and not a dislocation, but the nature of which I did not understand, and hoped it would become apparent when the swelling had subsided. The forearm was bent, the arm brought close to the side in a splint, leeches and cold lotions were applied, and repeated until the swelling very slowly subsided.

I was now satisfied that the humerus had been broken at its anatomical neck, and forced through the pectoral muscle, the fascia and skin covering which, offering a sufficient resistance to prevent it passing through them, and forming a compound dislocation, causing the bone, however, to pass upwards, and puckering the skin by carrying it along with it. The arm was shorter, and the retraction of the pectoralis major, and, probably, of the subscapularis, had drawn the

bone more into the situation the head of the humerus usually occupies when dislocated under the pectoral muscle. The shape of the broken end of the bone was satisfactory as to its being a broken bone, but I was not at all pleased with its situation, and as no common ordinary extension moved it downwards, I caused him to be largely bled, and gave him tartar emetic, in different doses, to twelve grains, during an hour and a quarter placing him under a gentle but gradually increasing extension in the pullies. I found I could bring the bone down to its natural situation, as to length, but I could not make it remain in its proper place; there was, therefore, nothing to be done but to allow nature to work for herself, and she has certainly worked wonders, for, at this moment, Cadman suffers from one inconvenience only, and that is, that he is unable to touch the ceiling with the hand of the injured side at the same distance he can with the other; he is obliged to be five or six inches nearer to it, from the arm making a greater angle with the head than on the sound side. In all other respects he can do his work just as well as before. When he sits in a chair, with the forearm bent, resting on his thigh, and the hand supine, the prominence of the broken bone is very remarkable, and, on placing a dry bone by the side of it, it appears to correspond to the small tubercle on the inner side, and also to a part of the great tuberosity on the outside. The hollow between seems to be that for the passage of the long head of the biceps, but whether this tendon runs in it, or not, I cannot ascertain. The tendon of the subscapularis appears to be attached to the inner and back part of the small tuberosity, and to have drawn it inwards, whilst that of the pectoralis major, which is well defined, has drawn it inwards and forwards.

The portion of the head of the bone, on the whole, perhaps, of the contiguous surfaces, remains attached *in situ*, with a part of the great tuberosity, but how far, or how much of the muscles inserted into this process remain with it and the head, I cannot ascertain; I should think but little of the teres minor.

The arm moves with perfect ease in every direction; when it is rotated outwards and backwards, the broken end of the humerus seems as though it were going to come through the skin, it is so prominent; and when the arm is raised as high as it can be done, the prominence of the bone is seen above the shoulder, as it then rides as high as the clavicle.

Mr. White thinks he has seen a case something like it, from there having been the same sort or pucker in the skin in front; and Mr. Cusack, of Dublin, thinks he has met with one of the same kind, from having also seen the pucker described; both these cases did well, but with unseemly shoulders.

I am of opinion that the elbow came first to the ground, but that the step of the ladder struck almost simultaneously against the head, or, rather, across the neck of the humerus, and that the effect of the first blow, which would have caused a dislocation, was thus modified, and gave rise to a fracture. It is not, after all, of any consequence to know how the thing happened, but it is of importance to know that, if nothing is done, nature will right herself so as to recover the use of the arm.

Surgery is not, however, satisfied with this, and my object, in a future case of this kind, now that I think I understand it, would be to prevent the deformity, which, in a woman's arm, is considerable, although much less than I expected, for the pucker has disappeared, and the humerus, under use, has resumed so much of its natural direction, that I should never have thought of extension by the pullies if it had always been the same. The pointed ends of the fracture will get rounded off, and form a small rounded extremity of bone, and a kind of false joint with the parts around. There is, I presume, some ligamentous union with the head of the humerus.

In a case of this kind, in future, I should make extension until the bone resumes its proper place, but this must be done very carefully, for I am not sure it could be done effectively without tearing the skin of the pucker or fold I have described, certainly not without great risk of doing it, which would render the accident a very dangerous one.

If the bone could be brought into its proper place, of which, from this and other causes I have some doubt, it is probable it would not be easily retained by paddling the axilla, and other means which would, at the time, suggest themselves to you, and, if it were, it is possible that bony union, in such a situation, might be

more detrimental to the free use of the arm than the mode of union which nature has adopted. I am inclined to believe that the capsular ligament of the joint is not torn, or, at least, not extensively, but this must be a matter of conjecture.—*Lancet*, Dec. 23, 1837.

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49. Velpeau's *Treatment of Fractures.*—The fracture being reduced, which M. Velpeau thinks should always be immediately effected, he surrounds the limb, from the roots of the fingers or toes, up to its proximal extremity, with a slightly compressing bandage, so as to maintain the fractured pieces in a convenient position; and instead of using splints and compresses, he makes the envelope itself, which the bandage forms, stiff. He at first thought of using for this purpose the solidifying liquid of M. Larrey (albumen), but afterwards he found it preferable for the purpose to make use of starch, prepared after the method used by washerwomen, in imitation of the example of M. Sentin, of Brussels. This latter surgeon, however, uses a different apparatus, viz: a double Scultetus' bandage, and splints of double layers of card-board.

The dressing of the whole apparatus is effected in from two to four days. When this has once taken place, the limb and the bandage are so exactly moulded to one another, that displacement is impossible. The compression being everywhere equal and moderate, supports the tissues, and does not produce any inconvenience. The patients can turn themselves and move about in their beds as if they had only a simple contusion of the leg. They are not obliged to remain confined and immoveable for six weeks or two months; but may, without inconvenience, sit up on rather a high seat (for they may slightly flex the leg,) and may walk about with the assistance of crutches, and supporting the foot in a great stirrup tied round the neck.—*Gazette Médicale*, Oct. 7, 1836.

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50. *Case of Rupture of an Aneurism of the Common Carotid and Ligature of that Artery near its origin from the Innominata.* By T. Argyll Robertson, M. D., of Edinburgh.—The following instance of aneurism, besides being interesting in several points, appears more particularly worthy of being placed upon record, as being one of the few cases in which a ligature has been applied to one of the larger arteries of the body, *nearest* to their common origin from the heart, with *perfect ultimate* success.

Major ——, the subject of the case, is now in his fifty-second year. In April, 1836, while hunting, his horse, when at full speed, put its foot into a rabbit-hole, by which both it and its rider were brought to the ground with great violence. Major —— received a severe wound over the left parietal bone, which bled profusely, and he remained for a short time stunned, and in a state of insensibility. From that period he suffered from stiffness and pain in the right side of the neck, resembling what is usually termed a crick, accompanied by shooting pains over the whole right side of the head; occasional attacks of giddiness, slight strabismus, and double vision followed, the last to so great a degree that he was forced to give up his favourite amusement of hunting, every gate, fence, &c. appearing to him double. The sight was particularly confused when looking straight forward, and still more so to the right. He likewise lost all idea of distances. On shutting either eye vision again became distinct. The motions of the iris in each eye were perfectly natural. The appetite was good, and bowels regular. Pulse rather full, but in other respects natural. In addition to the above symptoms, in December, 1836, he began to suffer occasionally from a feeling of numbness and coldness of the left arm and leg. At this period he placed himself under the care of Professor Alison and myself. Looking upon the symptoms as indicating a tendency to an apoplectic attack, we placed him upon a regulated diet, his bowels were kept open, leeches were ordered every second or third day to the temples, or behind the ears; he had cupping-glasses applied upon two or three occasions. The head was shaved and sponged several times a day with cold water, and he was desired to take regular but moderate exercise, and to reside quietly at his seat in the country. Under this treatment his health was much improved, and his vision was almost perfectly restored.

About the middle of January last he first discovered a swelling on the right side of the neck, accompanied by enlarged tonsils, slight sore throat, and some difficulty in swallowing. The swelling in the neck was supposed to be simply an en-

larged gland, and did not attract particular notice. Leeches were ordered to be applied from time to time, more especially if it should inflame or become painful.

On the 20th of March, without any premonitory symptoms, at 10 o'clock, P. M., a sudden gush of blood took place from the mouth; it was discharged in gulps or mouthfuls in rapid succession; it ceased spontaneously after half an ordinary washhand basinful of blood had been lost; he retired to bed, and slept very soundly during the whole night.

The following morning he rose at eight o'clock, but had scarcely reached his dressing-room, when the hemorrhage returned, and, to use his own expression, the blood literally poured from his mouth; he soon fainted and fell upon the floor, breaking a foot-pail in the fall; about fifty ounces of blood were at this time discharged by the mouth, and a considerable quantity must have passed into the stomach, as the stools afterwards consisted almost entirely of coagulated and grumous blood. By the two hemorrhages he must have lost upwards of one hundred ounces of blood. The bleeding now ceased, and he rallied a little and procured assistance. He remembers distinctly that at this time he shook very much, and felt excessively cold. Having taken a laxative the previous night, he had now an urgent call to stool, and was carried by his servant to the water-closet, when he had a copious alvine evacuation, after which he again fainted. On recovering he still shook very much, and felt very cold; he was put to bed and warm bottles were applied to the feet.

On arriving at the patient's residence, I found him perfectly composed and tranquil, with the pulse scarcely perceptible at the wrist, and continuing to beat about forty-five strokes in the minute. On examining the neck I found a tumour extending from near the angle of the jaw to *within one inch* of the sternum, and projecting laterally to about three inches. Its surface was smooth, equal, and rounded, and a very obscure pulsation could be detected. Judging from the state of the circulation, and from there not having been the slightest return of the bleeding since 8 A. M., that there was not immediate danger, I thought proper to postpone attempting to secure the carotid below the seat of the aneurismal swelling (evidently the only surgical resource that was left me), in order that I might have the benefit of daylight for the operation; and I sent off to Stirling for Mr. Forrest, that we might have the advantage of his advice and assistance in so important a case.

In consequence of the aneurism being seated so low down in the neck, the external incision was limited to little more than an inch, following the course of the sterno-mastoid, from the sternum upwards. On dividing transversely the sterno-thyroid and a few fibres of the sterno-hyoid muscles, a narrow projection of the aneurismal tumour, passing between the artery and trachea, was brought into view; so narrow that I at first supposed it to be the artery somewhat dilated, and passed the aneurism-needle round it. It was, however, about double the size of the artery, and its coats were thinner than natural. On examining the parts more minutely, I discovered the carotid displaced laterally by this prolongation of the sac. The pulsations were feeble, though perfectly distinct; the situation at which it was exposed was within a finger's breadth of its origin from the innominata, and when the finger was applied to this point the carotid was felt pulsating on its palmar,—the innominata on its lateral surface. Immediately above this point the vessel swelled out into the aneurismal tumour. The ligature was therefore applied *within half an inch* of the *origin* of the artery. During the performance of the operation neither vein nor nerves were seen. The operation itself was necessarily tedious and difficult, in consequence of the limited extent of the external incision, the deep situation and unnatural displacement of the artery, and the importance of the organs by which it is surrounded. At one time I thought it would have been necessary to have divided the sternal attachment of the sterno-mastoid, but this was avoided by relaxing the muscle and drawing it outwards. The vessel was no further separated from its attachments than was necessary for the simple passage of the aneurism-needle. On tightening the ligature all pulsation ceased in the tumour, and it was reduced nearly a third in bulk. No peculiar sensations were experienced by the patient, who bore the operation with the greatest possible fortitude. He was placed in bed, with the head considerably elevated to relax the parts, the lips of the wound having been previously brought together by suture, and supported by a strip of

adhesive plaster. Strict antiphlogistic regimen and perfect rest were enjoined. The bowels were regulated by enemata, to avoid any risk of sickness, vomiting, or hypercatharsis from the exhibition of cathartics. The wound healed by granulation; at first the discharge was thin and slightly tinged with blood, but gradually it assumed the characters of healthy pus.

On the seventeenth day the ligature separated, and the wound speedily healed. The aneurismal tumour rapidly disappeared, and now no trace of it whatever can be discovered. From the period at which the ligature was applied up to the completion of the cure not an untoward symptom appeared. On the second day after the operation the pulsation in the branches of the external carotid was distinct. During the third week a few drops of blood were discharged from the right nostril, accompanied by a little irritation giving rise to a great desire to sneeze, probably depending on the new arrangement of the circulation.

At the present time, 28th September, six months from the date of the operation, Major —— is in the enjoyment of the most perfect health.—*Dublin Journal of Medical Science, &c.*, January, 1838.

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51. *Lateral operation of Lithotomy.*—In the fulfilment of our duty to lay before our readers every *novelty*, we must notice a paper by John Crichton, Esq., of Dundee, published in the *Edinburgh Medical and Surgical Journal*, for July last, which appears to us at least to have claims to that character. We were taught to regard lithotomy as a very serious operation. Serious, because it often involves the life of the patient, terminating fatally, even when most skilfully performed, in one-fifth, sixth, or, at least, one-tenth of the cases;* serious, too, from its extreme painfulness.

It would appear, however, from the paper of Mr. Crichton, that we have been entertaining very erroneous notions on this subject; and that there is little risk of life, and little suffering attendant upon the operation. Of forty-five cases in which this surgeon has operated, all "recovered rapidly and perfectly," excepting in the case of one man, who died suddenly and unexpectedly from what appeared to be some affection of the heart, but which was *no way connected with the operation*, and in two or three others, where the constitution had been previously completely broken down, and the urinary organs, from the kidneys downwards, were a mass of disease, and *who submitted to the operation, not with any expectation of prolonging life*, but merely to alleviate suffering during the term of their existence."

Mr. C. gives the following summary of thirteen cases, in which the operation was performed; and in which union by the first intention was accomplished:—

"1. Mrs. Low, aged about 30, from Tealing. After labouring under symptoms of *calculus vesicæ* upwards of twelve months, on the 26th September, 1828, the urethra was slit up, and a large rough stone extracted in the course of a few seconds. The urine was retained and passed in full stream from the first, and she went home quite well eight days afterwards.

"I may here remark, that the generally received opinion of lithotomy in females being followed by incontinence of urine, does not hold true so far as my experience goes. In this, as in every other case in which I have operated, the ability to retain the urine has remained unimpaired.

"2. John Chalmers, aged three, from Claverhouse. Affected from his birth with symptoms of *calculus*, which for some months have been extremely urgent, accompanied by tenesmus and protrusion of the inner coat of the rectum to a great extent, often to the size of a child's head.

"On the 1st July, 1829, a rough stone, weighing ten drachms, was readily enough extracted, although the gaining access to the bladder was rendered somewhat difficult by the great protrusion of the rectum, which was no sooner replaced than it again immediately protruded.

"For some days he was quite well, diverting himself as if nothing had happened; but on the sixth day he became affected with severe pain and tension of the abdomen, in consequence of some stoppage to the passing the urine by the urethra.

* That more favourable results have been obtained, we are aware; but we must regard such, until more fully explained, as *exceptions* to a general rule, and as in no way affecting the accuracy of the opinions we have imbibed

Immersion for some time in warm water removed the obstruction in the urethra, and procured immediate relief. On the following day he was enabled to leave his bed-room, and continued afterwards quite well.

"3. James Cock, aged three, from Lochee. Symptoms of *calculus vesicæ* from his birth. On the 31st August, 1830, a rough stone, weighing two drachms, was easily and speedily removed by the lateral operation. Nine days afterwards was out with his mother enjoying the fresh air, and two days after that went home quite well.

"4. William Laing, aged four, from Forfar. Symptoms of *calculus* from his birth. 20th March, 1831, was operated on, and a rough stone, weighing two drachms, extracted within the course of a minute—diverted himself with his playthings from the first, was out of bed at the fireside the following day, and on the eighth day was running about quite cured.

"5. Benjamin Orrach, aged 65, from Kirriemuir. After suffering for many years under symptoms of *calculus vesicæ*, submitted himself to the lateral operation on the 20th May, 1831, and a stone, weighing five and a half ounces, was quickly and easily extracted. Three days afterwards he was walking about with his clothes on, and fourteen days after the operation went home, a distance of eighteen miles, quite well.

"6. William Both, aged about 40. After suffering severely for nine years under repeated attacks of *nephralgia* became affected with symptoms of *calculus vesicæ*, for the removal of which he submitted to the lateral operation on the 11th July, 1831. The incisions were performed, and entrance into the bladder obtained in the course of a few seconds. But there occurred some difficulty in laying hold of the stone with the forceps, which, after several trials, were altogether withdrawn, and the stone turned out with the fore-finger of the right hand. The cause of the difficulty was the shape of the stone, which resembled a crown piece in size and form, the blades of the forceps rubbing over the surface instead of grasping it. Three days afterwards he was walking about with his clothes on; and eight days after the operation was busily employed from morning till night, in perfect health, in serving his customers in a small retail shop which he kept.

"7. John Walton, aged three and a half, from Forfar. Affected from his birth with symptoms of stone in the bladder. On the 6th April, 1832, a rough stone, weighing three drachms, was removed by the lateral operation, within the minute. He diverted himself with his playthings from the first, and was taken home to Forfar eleven days after the operation in perfect health.

"8. Murdoch M'Kenzie, aged 69, from Oathlaw, had been operated on by me twenty years before, and made a rapid recovery. He continued free of complaint for seventeen years, when symptoms of calculus again began to make their appearance. On the 16th June, 1834, he again submitted to the operation, and a small stone was easily extracted within the minute. Four days afterwards he reported himself quite free of complaint, and continued so till he went home, a distance of twenty miles, some little time afterwards.

"There was something remarkable in this case. The sounding was always attended with most exquisite pain, followed by severe rigors, terminating in acute fever for a day or two, yet after the operation itself neither rigors or fever followed.

"9. John Costly, aged three. Symptoms of calculus from his birth, was operated upon on the 17th June, 1834, and a stone weighing two drachms speedily extracted. He suffered nothing, and was soon frisking about in good health.

"10. David Beat, aged 57, from Balgay, a poor man affected with paraplegia, and for three years labouring under symptoms of *calculus vesicæ*. Submitted to the lateral operation on the 11th September, 1834, and a rough stone, weighing once ounce, easily extracted in the course of one minute and a half. He suffered nothing, and was taken home shortly afterwards cured of his calculus complaint.

"11. George Alexander, aged six, from Arbroath, after suffering severely for several years under symptoms of calculus, on the 2nd November, 1835, a rough stone, half an ounce in weight, was speedily extracted by the lateral operation. Went home quite well seventeen days afterwards.

"12. M'Donald, aged three, from Dawfield. Symptoms of calculus from his birth, underwent the lateral operation on the 12th December, 1835, when a small

rough stone was extracted in the course of two minutes, a little delay having been experienced by the protrusion of the rectum; suffered nothing, and was taken home shortly afterwards quite well.

"13. Alexander M'Lean, aged eight, from Lochee, after suffering severely under symptoms of *calculus vesicæ* for eighteen months, a rough oval stone was removed by the lateral operation in the course of a minute and a half. Slept the greater part of the time during the two first days, on the third sat by the fireside in an adjoining room, and eleven days after the operation was running about in perfect health."

The reader will, perhaps, suspect that, as it is the surgeon, and not the patient who is the narrator of these cases, that the estimate of the degree of pain suffered by the latter, at all times difficult, may not be very exact in the present instances. If he will compare these cases with those he has himself witnessed, he will readily decide, whether the former furnish an accurate representation of the sufferings usually inflicted by the operation. If they do so, we will not object to the following expressions of Mr. C.:—

"Certainly any thing I myself have seen or had experience of in the matter affords little encouragement to believe that any instruments, however ingeniously contrived, can ever effect the removal of urinary concretions with so little suffering, risk of life, and injurious consequences as the simple, easy, and efficient mode of making an entrance into the bladder with the knife."

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52. *Division of the Tendo-Achillis for Club-Foot.* The *Medico-Chirurgical Review*, for October last, contains the following abstract of four cases, narrated by Stromeyer, in a late No. of *Rust's Magazine*, in which this operation was performed by the narrator. We were unable to quote these cases in their appropriate place, our copy of the first-named Journal not being at hand when our remarks on the operation were written; (see p. 116 of this No.) but, as we have now the No. before us, and these cases are highly interesting, we will insert them here:—

"The first case was that of a boy, seven years old, who had been born club-footed in both limbs. The right foot was most deformed. The tendo-Achillis was divided. The wound healed speedily by the first intention; but the extension was not commenced till eight days after the operation. Whether the connecting cellular tissue had by this time become too unyielding to permit the foot being brought into a natural position, or there was some other unfavourable condition present, we are not informed; but it appears that the patient was not at all benefited by the operation which had been performed, and the parents would not consent to a second one being performed, as proposed by Stromeyer.

"The second case was more successful. The disease was not congenital, but had come on, without any very evident cause, when the boy, now 13 years of age, was in his fourth year. The twisting of the foot was even worse than in the preceding case; and in addition to the general deformity, the big toe was permanently contracted downwards and inwards, in consequence apparently of the flexion of the tendon of the flexor longus pollicis. Dr. Stromeyer was of opinion, that before attempting to remedy the greater evil, it was advisable to rectify the deformity of the toe. The tendon of the flexor longus was therefore divided, and three days afterwards the toe was extended, and kept in that position for a week. The more important operation was then performed. Extension was commenced on the fifth day. In the course of ten days, the foot had been brought to an angle of 70° with the leg. Four weeks after the operation, the extension-apparatus was exchanged for the mechanical boot which has been contrived by Stromeyer for the purpose, and the patient allowed to walk out. Half a year afterwards, he could move about with the greatest ease, and with the exception of a slight turning-in of the point, the foot had regained its normal shape and mobility.

"In the third case, that of a boy nine years old, the disease was congenital. The toes and the metatarsus of the right foot were bent strongly downwards, so that the dorsum of the foot formed quite a convex line with the leg, and the great toe was drawn upwards in a strange manner towards the foot, so that the only point of support, when the patient stood or walked, was the metatarsal joint of this toe. The tendo-Achillis was divided; and on the fifth day afterwards the extension apparatus was put on.

"As the point of the foot was still drawn considerably inwards by the contraction of the tendon of the flexor longus pollicis, this was divided, and extension afterwards kept up.

"In about ten weeks after the date of the first operation, the form and mobility of the foot left nothing to wish for; and the boy could move about with the greatest facility.

"The fourth case occurred in a youth 19 years of age. The foot was turned inward, so that the point of support in standing was on the metatarsal bone of the small toe. The result of the operation and of the subsequent treatment was so successful, that the deformity was quite removed (das entstellende eubel war ganz gehoben.")

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53. *Section of the Sterno Mastoid-Muscle, for the cure of Wry-Neck.*—This operation has been performed by M. Amussat. The patient, a man 53 years of age, stated that seven years ago, while carrying a heavy weight on his back, he suddenly felt a sharp pain on one side of the neck, and that this pain lasted for the following fortnight or three weeks; that some time after all uneasiness had ceased, he began to experience, chiefly at night, a stiffness of the neck, and a tendency to incline it to the left side; that on awaking one morning, he found that he had a very painful wry-neck; that this attack however speedily abated; but that ever afterwards the stiffness of the neck and its turning to the left side were much more troublesome than they had been before, and that these symptoms soon increased so much, that he was forced to resort to the expedient of steadying his head, when engaged at his work, by fixing a packthread to his front teeth, and securing it to one of his thighs! This expedient, however, proved insufficient; and in the course of ten months, the malady had increased so much that he was forced to discontinue altogether his employment as a shoemaker. The left sterno-mastoid had become larger and thicker than its fellow. A variety of remedies, including blisters, acupuncturation, electricity, &c., had been tried without avail. M. Amussat therefore advised him to submit to the division of the affected muscle. Pinching up the skin, about an inch above the insertion of the muscle into the extremity of the clavicle, he divided the fold with a sweep of the bistoury; he then severed the muscle, layer of fibre after layer, permitting one to retract before dividing the other, until the entire substance was fairly cut through, with the exception of a few of the outer, or clavicular fibres. A few arteries sprung; but the hemorrhage from these was easily arrested, by twisting their bleeding extremities. The wound was then dressed with simple cerate. The wryness of the neck was unexpectedly quite as great after, as it had been before, the operation, and continued to be so for at least three weeks. As the cicatrization of the wound advanced, the deformity was observed to decrease; and, by the end of the sixth week after the operation, when the wound was quite healed, the normal position of the neck was perfectly recovered.

The most interesting features of the present case are, first, the long continuance of the malady; it had existed for seven years; secondly, the cure obtained without the use of any apparatus, either during or after the section of the muscle; thirdly, the permanence of the cure—it is now upwards of a twelvemonth since the date of the operation; and lastly, the proof which is thus established of the efficacy of the treatment recommended by the older surgeons, and which of late years had fallen into unmerited desuetude.

The point at which M. Amussat divided the muscle, was that usually indicated in surgical works. M. Malgaigne has, in his Manual Operatoire, suggested that the division should be made higher up, with the view of more effectually avoiding the large blood-vessels in the neighbourhood, and also because the muscle is less bulky. With respect to the former of these motives, it is founded on an anatomical mistake; for M. Amussat shews that the sterno-mastoid is as close to the blood-vessels higher up in the neck, as it is lower down; and moreover, that at this latter point, the omo-hyoideus being interposed between the muscle and the vessels, secures the latter in some degree from the risk of injury.—*Med. and Chirurg. Rev.* from *Gazette Médicale de Paris.*

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54. *Radical cure of Varicose Veins and of Herniæ by Acupuncturation.*—M. Bonnet, Surgeon in Chief of the Hôtel Dieu at Lyons, has treated eleven cases of

varicose veins by introducing pins through their cavities, and allowing them to remain there for some time. Nine of these cases were cured. He has applied the same treatment to herniary sacs; and the following is a short account of his method, and of the success which he has obtained from it. He passes three or four pins through the herniary coverings close to the inguinal ring, and in order that they may exert a certain degree of compression, as well as of irritation, on the sac, he twists upwards their points and heads, so as to give them a circular direction.

Caution is necessary not to injure the spermatic cord. The inflammation and pain commenced usually on the third or fourth day after the operation, and the pins were removed a few days afterwards. M. Bonnet has treated four cases of inguinal herniæ by acupuncturation. In two of these, the herniæ were small, and three weeks sufficed for the cure. The third was more troublesome. It occurred in an old man 67 years of age; and in him the hernia descended to the bottom of the scrotum, and was with difficulty kept up by a truss. Six needles were used. After a month's treatment, this patient could walk about, without any tendency of the viscera to descend. In the fourth case, the hernia was of 30 years' standing; no truss could keep it up; the inguinal aperture was large enough to admit the introduction of five fingers, and the tumour descended a considerable way down the thigh. Five weeks were necessary for the cure. We are assured that all these patients could cough and walk about freely without any escape of the bowels, and that the inguinal ring was so plugged up, that it could no longer be distinctly recognised.—*Ibid.*

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55. *Dissection of an Old Dislocation of the Thumb, with Remarks and Experiments.* By J. Adair Lawrie, Professor of Surgery, Glasgow.—I am indebted to Dr. Hunter, Andersonian Professor of Anatomy, for permission to examine and make public the following case:—A female subject was brought into Dr. Hunter's dissecting rooms during the course of last winter, with an unreduced dislocation of the phalanx of the right thumb, on the back part of the metacarpal bone. It was ascertained on inquiry, that the dislocation had existed for three years, and that several unsuccessful attempts had been made to reduce it. The motions had been partially restored and performed without pain. Previous to dissection, the phalanx was seen to be thrown back, with an anterior and posterior prominence. The thumb shortened, the second phalanx not bent on the first, and the articulation between them capable of free flexion and extension. There being no swelling, the nature of the accident was obvious.

Dissection.—Bones: the end of the phalanx was thrown on the back and inner part of the metacarpal bone, to the distance of at least an inch. The circumstance of the phalanx being placed on the inner side of the back part of the metacarpal bone is worthy of notice, as I believe that it is almost uniformly so situated in this dislocation. The end of the metacarpal bone projected forwards to a distance corresponding with the displacement backwards, free from muscle or ligament.

Ligaments.—The anterior ligament torn from metacarpal bone; the posterior pressed back, but apparently nearly entire. The anterior portion of external lateral torn; the posterior portion stretched, thrown back and across the metacarpal bone; the internal entire. New ligamentous connexions had formed between the displaced bones.

Muscles.—Extensors thrown back, and somewhat stretched over the end of the phalanx; of these, however, I cannot speak with certainty; as they were cut before I examined the preparation minutely. Abductor thrown back, and a little stretched. Opponents a little changed. Flexor brevis: on this muscle, and the flexor longus, the alteration of position was most remarkable. Dr. Hunter thought that the brevis was not torn, but that the end of the metacarpal bone had passed between its two portions, one of which was on each side of it, grasping it firmly. Further examination induces me to think that the greater part of the outer head was torn, the end of the metacarpal bone having passed through its fibres, and that the inner head was uninjured, having slipped to the inner side of the metacarpal bone. The tendon of the flexor longus lay on the inner side of the metacarpal bone, along with the inner head of the brevis, pressing on the abductor, and pushing it back, which last muscle, with this exception, was unchanged.

Nerves.—The first, or external digital nerve, is thrown to the inside of the

metacarpal bone, and lies imbedded between the phalanx and metacarpal bone, at the points where the former rests on the latter.

Sesamoid bones were not connected with the metacarpal bone. It was found that it would injure the preparation if the dissections were carried so far as to ascertain if they were placed between the metacarpal and the phalanx, in which situation I have, however, no doubt that they are.

Although there are several points in the above dissection which were new to me, they had rather the effect of unsettling my previous opinion as to the cause of difficulty in reducing this dislocation, than of satisfying me as to what that cause really is. In the hope of farther elucidating this point, I proceeded to make experiments on the dead body. To detail all these experiments and dissections, (and I have made a great many,) in the order in which they were made, would be tedious and unnecessary. I prefer arranging them into three classes, according to the amount of dislocation produced, and giving one dissection as an example of each class. The experiments consisted in dislocating the articulations, by grasping the phalanges of the thumb and bending them powerfully backwards; and the dissections, in dissecting the parts, and removing one layer of muscular fibres and of ligaments after another, so as to ascertain the true cause of the difficulty of reduction.

I. Partial dislocation.—The external characters are—anterior and posterior prominences slight; the posterior projects directly backwards. Phalangeal articulation bent like the dog-head of a gun, and cannot be extended; disfiguration considerable.

Dissection.—No muscular fibres torn: abductor and both heads of flexor brevis somewhat stretched and thrown a little back; tendon of flexor longus considerably stretched, but not displaced, retaining its natural position on the forepart of the articulation between the two heads of the brevis.

Ligaments.—Anterior partially torn; posterior entire, stretched; external lateral has a few of its anterior filaments torn, its posterior stretched; internal lateral entire, a little thrown back. Articular extremities of bones partially displaced; that of phalanx backwards, and very slightly inwards. Reduction was easily effected; all that was necessary was to extend the articulation between the phalanges; the flexor longus tendon, when brought into a straight line, drew the bones into their place.

Remarks.—I have never seen this dislocation on the living subject. It probably seldom requires surgical treatment, being reduced by the action of the flexor longus or by pressure made by the patient over the articulation. The muscles are too little displaced to oppose much resistance to the reduction.

II. Complete dislocation.—External characters: anterior and posterior prominences well marked; the latter a little to inside. Articulation between phalanges bent, but can easily be extended.

Dissection.—Abductor and adductor nearly as in the last experiment. Inner half of external head of flexor brevis torn by the end of the metacarpal bone; remaining part lies on the outside of the bone, and thrown back. Internal head lies to the inside of the bone, and somewhat backwards. Tendon of flexor longus thrown from off forepart of articulation to inside of metacarpal bone, and carried considerably backwards, pressing on inner head of brevis and adductor; that part of its sheath connecting it with the articulation, and the end of the metacarpal bone, torn; that connecting it with phalanges entire. Anterior ligament torn, excepting at inner side; posterior entire, stretched; internal lateral entire; anterior part of external lateral slightly torn; posterior part stretched, thrown back, and a little across end of metacarpal bone. Displacement of phalanx backwards does not exceed half an inch. Sesamoid bones remain attached to phalanx. Reduction on dead subject easily effected.

Remarks.—I should not anticipate great difficulty in reducing this dislocation on the living. The causes opposing reduction I conceive to be the following:—

1st. *Muscular contractions.*—The muscles least affected and most easily overcome, are the extensors, abductor, and adductor. The flexor brevis and longus are less easily dealt with; we have seen the metacarpal bone driven through the external head of the brevis, and so situated as to be firmly grasped between its remaining fibres and the internal head, the tendon of the longus on the inside of the articulation dragging the phalanges inwards, and locking them in contact with

the metacarpal bone. These, though rather formidable obstacles, are within the control of bleeding, antimonials, and the pulleys.

2nd. *Ligaments.*—My experiments lead me to conclude that the lateral ligaments have been reckoned of greatly too much importance in this dislocation. If they are the causes of difficulty, the reduction ought to be nearly as difficult on the dead as on the living, which in this degree of dislocation is by no means the case. It is quite a mistake to suppose that the end of the metacarpal bone is grasped by the lateral ligaments, and cannot escape. The internal lateral ligament is little, if at all, implicated in the matter; the external may result in this way. The phalanx being thrown inwards, the external lateral ligament is dragged with it, and thrown a little across the back of the metacarpal bone, and in attempts to reduce the dislocation, catches on the prominence, on the outer and back part of the same bone. If the phalanx is pulled forwards and bent across the palm of the hand, the resistance will probably be considerable, but never such as to require or justify the operation of cutting the ligament. To overcome the difficulty, use the pulleys, press the bones asunder by pushing the metacarpal bone towards the palm, the phalanx towards the dorsum, extend the thumb towards the points of the fingers, not across the palm; next press the metacarpal bone backwards and inwards, the phalanx forwards and outwards; lastly, smartly bend the joint.

3d. The third cause of resistance is the locking of the prominences on the back part of the metacarpal bone, and the fore part of the phalanx. The manipulations recommended ought to overcome this difficulty.

III. This dislocation is also complete, and differs from the last in the following respects:—The displacement is greater, amounting at least to an inch. The end of the metacarpal bone is driven completely through the inner fibres of the external head of the flexor brevis. The anterior ligament is completely torn from the metacarpal bone, and remains attached to the phalanx and sesamoid bones, in such a manner that the torn ligament and sesamoid bones are carried backwards by the phalanx, and placed between it and the metacarpal bone. This state of parts is aggravated and rendered permanent by the contraction of the muscles attached to the sesamoid bones and anterior ligament, which muscles, together with the tendon of the long flexor, only differ from their position as described in last section, in being carried farther back. The result is, that the opening in the ligaments by which the metacarpal bone escaped, is thrown back nearly half an inch, and the remains of that ligament and sesamoid bones form a partition between the displaced ends of the bones, which form a mechanical obstacle to the reduction of the dislocation, in some instances I fear insurmountable. This, I am satisfied, is the true cause of the difficulty experienced in replacing the bones in some cases, and of total failure in others. The position of the digital nerve, in Dr. Hunter's preparation, proves that besides the sesamoid bones and ligament, whatever parts are more firmly connected with the phalanx than with the metacarpal bone, will follow the former backwards, and be wedged between it and the latter. It must further be kept in mind, that, in addition to this mechanical obstacle, we have all the causes of resistance mentioned in the last section.

How are these difficulties to be overcome? I fear, as already hinted, that in many cases the reduction is impossible, without the infliction of an unwarrantable extent of injury on the thumb. I have not yet, in practice, met with an "impossible" case; but whenever the displacement is great,—and I believe the amount of mechanical obstruction will generally correspond with the extent of displacement,—I would recommend the following:—Take a door-key, the open part of the handle of which will rather exceed the length of the first phalanx; put the thumb through it, apply the pulleys, give tartar emetic, and bleed to faintness; extend the pulleys (in the direction recommended in last section) as far as can be safely done; employ the manipulations already described, assisting the flexion with the key, so used that the curve which lies on the dorsum will press on the nail end of the first phalanx, and the opposite curve on the end of the metacarpal bone. This failing, reverse the key, carry the under curve towards the point of the thumb, place the posterior on the displaced end of the phalanx, and throw the parts into forced extension, relaxing at the same moment the pulleys.

I disapprove of cutting; but if a knife is used, employ one which is narrow but strong; pass it into the joint and between the bones, in such a manner as (if possible) to disengage the anterior ligament and sesamoid bones from their unnatu-

ral position. This attempt should be made while the pulleys are in operation. As the external lateral ligament is not the cause of the mechanical obstruction, it is cruel to cut it: moreover, it is useless. I have cut it on the dead subject, and failed to replace the bones. Indeed, I believe that those cases in which the external lateral ligament is most extensively torn, are the most difficult to reduce, because in them the displacement is greatest; and in proportion to the extent of displacement the mechanical obstacle is increased.

Glasgow, August, 1837.

P.S.—Since writing the above, I have had the great pleasure of being introduced to Sir Astley Cooper, during his short visit to Glasgow. I took the opportunity of asking him what he considered the cause of the difficulty of reducing the dislocation. He at once replied, "The sesamoid bones." I asked, if he had verified this by dissection or experiments. To which Sir Astley answered, "In the great toe, but not in the thumb; but I am satisfied that the causes are the same in both." I then mentioned to Sir Astley what I had done on this subject; and I have great satisfaction in being allowed to give his very high authority in confirmation of the opinions given in this paper.

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56. *Inflammation of the Testicle cured by Compression.*—Dr. Hildebrand states, that since the publication of Fricke's paper on the treatment of orchitis by compression, he had made observations on five cases, consequent on gleet which had been too suddenly arrested by the excessive use of balsam copaiba during the inflammatory stage, by heating drinks, and by sympathetic metastasis of the inflammation. In these five cases it was the left testicle which was affected. In all, Dr. H. applied pressure by means of sticking plaster, after the manner recommended by Fricke (which we have described in a former number of this Journal), without any preparation. In two cases only, when inflammation of the testicle was very excessive, he applied six leeches, and applied warm fomentations to the part for six hours, partly to encourage the bleeding, and partly to lessen the tension of the whole scrotum. In all five cases he had seen the most extraordinary effects in the space of four or five days. The application of the compressive apparatus was not attended with the slightest inconvenience; it succeeded equally well when the patient lay in bed on his back, with his legs well separated, or when he sat on the side of the bed, or edge of a chair. The strips of plaster employed for compression were formed from the emplastrum cerussæ, and were not placed, as Fricke directs, from above downwards, but from the perinæum upwards, each strip half covering the one next to it, and proceeding thus till they came together over the pubis: he then laid a strip of adhesive plaster obliquely across the ends to secure them. From this compression, even when very tight, he has seldom seen any great pain follow. After, from twenty-four to twenty-eight hours, during which time the patients were obliged to lie in bed, with the scrotum well supported, the strips usually became loose from the diminution of the swelling. This loosened plaster was not taken off—the doing so would give great pain—but other slips laid over it, by which the pressure may be still kept up, and increased.—*Dublin Journal*, March, 1837, from *Medicinische Zeitung.*

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57. *Treatment of Syphilitic Buboes by Seton.*—Professor Levicaire, of the Marine Hospital, Lyons, states that he has employed the seton most successfully for the cure of syphilitic buboes. His method is the following: "As soon as he perceives that the bubo contains matter, he passes a strong, round, straight, long needle, carrying a thick thread, in the direction of the fold of the groin. The points of entrance and exit are those at whch the gland first begins to soften. He permits the seton to remain for only twenty-four or twenty-eight hours in quiet, and sometimes to promote irritation, and prevent the too rapid healing of the openings, moistens it with a weak caustic solution, and for the first days lays on an emollient poultice. When this is no longer necessary, he dresses it with a handful of cotton (unwrought) in order to promote the exit of the matter, the adhesive inflammation, and the developement of granulations. This is supported by a bandage round the loins, and exercises a very gentle, steady pressure. Dr. L. thinks every thing disadvantageous which promotes the absorption of the matter. The matter here escapes along the seton; the walls of the abscess come

gradually together: the air cannot penetrate through the opening, which is small, and filled by the seton, and the seton causes a healthy action, by means of which granulations are favoured. No cicatrix remains behind, and only three or four days are sometimes necessary for the healing of the bubo."—*Bulletin Gén. de Therap.*, April, 1837.

58. *On the Proximate Cause, and Radical Cure of Varicose Veins of the Leg.*—The observations of Signor Rima, surgeon in chief of the hospital at Venice, have led him to the conclusion that the real proximate cause of varicose tumours in the lower extremities is a reflux motion of the blood in the veins, for instance, the blood from the femoral vein retreats into the saphena, and is driven backwards from the groin towards the foot, by a power peculiar to these veins. Signor Rima has come to this conclusion from the following facts:

1st. When the surgeon removes a portion from a varicose vein in a living man, the blood is seen to spout from the upper end, as it does from an artery, as many operations of Rima, Monteggia, and Paletta have shewn.

2nd. In those persons in whom varices have been caused by wearing too tight garters under the knee, the veins are remarked to be more distended above the band than below it.

3d. When the operation for varix is performed either by the ligature or excision, those varices which are situated below the ligature or incision are seen to contract and finally disappear, whilst those situated above, remain stationary, or increase, which would not be the case if the blood in these vessels flowed, as it usually does, from below upwards, as the weight of the column of blood from above acts in such a manner as to paralyse the valves of the veins, and thus keep up the communication between the individual varices.

4th. And lastly, the pathological anatomy of varicose veins exhibits in the lower extremities hypertrophy of the walls, and a structure like that of the arteries.

This view of the disease naturally leads to important practical results, viz: that when about to operate, we should always select a part above the varix; in fact, that we should approach as near as possible to Poupart's ligament.

Signor Rima thinks that inflammation following on a passive dilatation of the weak venous parietes between every two valves, with the weight of the column of blood from above, may be the cause of this hypertrophy; from this chronic inflammation thickening follows, and a change of structure.

Whatever may be the truth of this explanation, we refrain from judging at present. The results of thirty-four operations by excision of an inch long of the vein above the first varicose swelling, is given as follows:

Radically cured	10
Much relieved	13
Slightly relieved	6
No relief	2
Death by phlebitis	2
Still under treatment	1
Total	34

Signor Rima, after excising a portion of the vein, makes use of simple compression to stop the bleeding, and avoids using the ligature through fear of phlebitis.—*Dublin Journal*, from *Giornale di Venezia.*

59. *Perforation of the Acetabulum caused by a fall on the Trochanter.*—M. Gama has given a case of the above mentioned accident. It occurred in a man æt. 30, who had fallen from a height of eighteen feet, and who had suffered a severe contusion in the region of the right trochanter. There was neither shortening nor deformity, but there was very severe pain at every movement of the limb. Some days afterwards the patient walked in the garden on crutches, and said that he felt very little pain. On the fourth day symptoms of violent peritonitis, with inflammatory swelling of the entire limb, came on. Death followed on the tenth day. On the dissection infiltration of pus was found in the immensely distended subcuticular cellular tissue, from the hip to the calf of the leg. In the right iliac fossa a conical swelling arose, and extended nearly to the kidney; this was an

abscess containing pus and torn pieces of the psoas muscle, and at the bottom of it the head of the femur was to be seen where it had burst through the acetabulum. The acetabulum was broken in three pieces; the smallest of these was placed with the round ligament upon it, and unbroken on the head of the bone; the second was the horizontal ramus of the pubis which was separated from the symphysis pubis and ischium, and the third, the ischium, which was no longer connected with the ilium.—*Gaz. Méd. de Paris.* No. 17. 1838.

60. *Ligature of the Primary Iliac Artery near the bifurcation of the Aorta.*—This operation, which was first performed by our distinguished collaborator, Professor Mott, and has only twice been executed since, once by Mr. Crampton of Dublin, whose patient died on the eighth day of hemorrhage, and once by Mr. Guthrie for supposed aneurism, but which proved to be fungus hæmatodes, has been recently performed with success by Professor Salomon of St. Petersburg. We will give the details of the case in our next number.

61. *Kreosote in Cancer.*—Dr. Friese states that he employed every kind of treatment for the cure of cancerous ulcerations without success, until he resorted to kreosote. In the case of a lady who was affected with cancerous ulceration of the skin on the calf of the leg, he applied over the surface of the sore, one part of kreosote in three of distilled water. The surface quickly became white; a thin eschar formed, which was detached on the fourth day, and the sore was covered with healthy granulations. The central portion healed after the third application, the edges required the wash to be repeated several times more, and stronger—equal parts of kreosote and water. The lady was perfectly cured.—*Berlin Med. Zeitung.* No. 13. 1837.

OPHTHALMOLOGY.

62. *On a Singular Developement of Polarizing Structure in the Crystalline Lens after Death.* By Sir David Brewster.—In examining the changes which are produced by age in the polarizing structure of the crystalline lenses of animals, I was induced to compare these changes with those which I conceived might take place, after death, when the lens was allowed to indurate in the air, or was preserved in a fluid medium. After many fruitless experiments I found that distilled water was the only fluid which did not affect the transparency of the capsule, and my observations were therefore made with lenses immersed in that fluid. The general polarizing structure of the crystalline in the *sheep*, *horse*, and *cow*, consists of *three* rings, each composed of *four* sectors of polarized light, the two innermost rings being *positive* like *zircon*, and the outermost *negative*, like *calcareous* spar. In other cases, especially when the lenses were taken from older animals, *four* rings were seen, the innermost of which was positive as before, and the rest *negative* and *positive* in succession.

I now placed a lens which gave three rings, in a glass trough containing distilled water, and I observed the changes which it experienced from day to day. These changes were such as I had not anticipated; but though I have observed and delineated them under various modifications, I shall confine myself at present to the statement of the general result. There is a *black* ring between the two positive structures or luminous rings. After some hours' immersion in distilled water, this black ring becomes *brownish*, and on the second day after the death of the animal, a *faint blue* ring of the first order makes its appearance in the middle of it, and its double refraction, as exhibited by its polarized tint, increases from day to day, till the tint reaches the *white* of the first order. Simultaneously with this change of colour, the breadth of this new ring gradually increases, encroaching slightly upon the inner positive ring, but considerably upon the *second* positive ring; so that the black or neutral ring which separates the two positive structures, and in the middle of which a new luminous ring is created, divides itself into two black neutral rings, the *one* advancing *outwards*, and *diminishing* the breadth as well as the intensity of the second series of positive sectors, and the other advancing inwards, and diminishing the breadth and

intensity of the inner or central sectors. While these changes are going on, the *outer* luminous or *negative* ring advances inwards, encroaching also on the *second* positive ring.

Upon examining the character of the new luminous ring, the developement of which has produced all these changes, I found it to be *negative*, so that at a certain stage of these variations we have a *positive* and a *negative* doubly refracting structure succeeding each other alternately, from the centre to the circumference of the lens, such as I have often observed in lenses taken from animals of greater age, and examined immediately after death.

After this stage of perfect developement, when there is a marked symmetry both in the relative size and polarizing intestines of the four series of sectors, the lens begins to break up. The new *negative* ring encroaches so much on the two *positive* ones, which it separates, that the outer one is sometimes completely extinguished, while the breadth and tint of the inner sectors are greatly diminished, so that the highest double refraction exists in the newly developed ring. In a day or two this ring also experiences a great change of distinctness and intensity, and the lens commonly bursts on the fifth or sixth day, sometimes in the direction of the septa or lines where its fibres have their origin and termination, and sometimes in other directions.

In order to give a general idea of the cause of these singular changes, I may state that the capsule which incloses the lens is a highly elastic membrane—that it absorbs distilled water abundantly—and that, in consequence of this property, the lens gradually increases in bulk, and becomes more globular, till the capsule bursts with the expansive force of the overgrown lens. That the reaction of the elastic capsule contributes to modify the polarizing structure of the interior mass, cannot admit of a doubt, as it is easy to prove that that structure is altered by mechanical pressure; but I cannot conceive how such a reaction could create a new negative structure between two positive ones, and produce the other phenomena which I have described. I have been led therefore to the opinion, that there is in the crystalline lens the germ of the perfect structure, or rather the capability of its being developed by the absorption of the aqueous humour; that this perfect structure is not produced till the animal frame is completely formed; and that when it begins to decay the lens changes its density and its focal length, and sometimes degenerates into that state which is characterized by hard and soft cataract.

The results, of which I have now given an exceedingly brief notice, appear to me to afford a satisfactory explanation of those changes in the lens which terminate in cataract, a disease which seems to be more prevalent than in former times. Accidental circumstances have led me to study the progress of this disease in one peculiar case, in which it was arrested and cured; and I am sanguine in the hope that a rational method of preventing, and even of stopping the progress of this alarming disease, before the laminæ of the lens have been greatly separated or decomposed, may be deduced from the preceding observations.

As the experiments, however, and views upon which this expectation is founded, are more of a physiological than of a physical nature, I am desirous of submitting an account of them to the Medical Section, that they may undergo that strict examination which they could receive only from the experience and science of that distinguished body.—*Report of sixth Meeting of British Association.*

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63. *On the Cause, Prevention and Cure of Cataract.*—The discovery of Sir David Brewster, of a singular change of structure, which takes place in the crystalline lens after death, consisting in the developement of a negative polarizing band or ring between the two positive rings nearest the centre of the lens; the gradual encroachment of this new structure upon the original polarizing structure of the lens; and the final bursting of the lens after it had swelled to almost a globular form by the absorption of distilled water, has led this eminent philosopher to entertain some peculiar views relative to the cause, prevention, and cure of cataract.

"As the crystalline lens floats in its capsule there can be no doubt," he observes, "that it is nourished by the absorption of the water and albumen of the aqueous humour, and that its healthy condition must depend on the relative proportion of these ingredients. When the water is in excess the lens will grow soft, and may

even burst by its over absorption; and when the supply of water is too scanty, the lens will, as it were, dry and indurate, the fibres and laminæ formerly in optical contact will separate, and the light being reflected at their surfaces, the lens will necessarily exhibit that white opacity which constitutes the common cataract.

"This defect in the healthy secretion of the aqueous humour, as well as the disposition of the lens to soften or to indurate by the excess or defect of water, may occur at any period of life, and may arise from the general state of health of the patient; but it is most likely to occur between the ages of 40 and 60, when the lens is known to experience that change in its condition which requires the use of spectacles. At this period the eye requires to be carefully watched, and to be used with great caution; and if any symptoms appear of a separation of the fibres or laminæ, those means should be adopted which, by improving the general health, are most likely to restore the aqueous humour to its usual state. Nothing is more easy than to determine at any time the sound state of the crystalline lens; and by the examination of a small luminous image placed at a distance, and the interposition of minute apertures and minute opaque bodies of a spherical form, it is easy to ascertain the exact point of the crystalline where the fibres and laminæ have begun to separate, and to observe from day to day whether the disease is gaining ground or disappearing.

"In so far as I know, cataract in its early stages, when it may be stopped or cured, has never been studied by medical men; and even when it is discovered, and exhibits itself in white opacity, the oculist does not attempt to reunite the separating fibres, but waits with patience till the lens is ready to be couched or extracted.

"Considering cataract, therefore, as a disease which arises from the unhealthy secretion of the aqueous humour, I have no hesitation in saying that it may be resisted in its early stages, and in proof of this I may adduce the case of my own eye, in which the disease had made considerable progress. One evening I happened to fix my eye on a very bright light, and was surprised to see round the flame a series of brightly coloured prismatic images, arranged symmetrically and in reference to the septa to which the fibres of the lens are related. This phenomenon alarmed me greatly, as I had observed the very same images in looking through the lenses of animals partially indurated, and in which the fibres had begun to separate. These images became more distinct from day to day, and lines of white light of an irregular triangular form afterwards made their appearance. By stopping out the bad parts of the lens by interposing a small opaque body sufficient to prevent the light from falling upon it, the vision became perfect, and by placing an aperture of the same size in the same position, so as to make the light fall only on the diseased part of the lens, the vision entirely failed.

"Being now quite aware of the nature and locality of the disease, though no opacity had taken place so as to appear externally, I paid the greatest attention to diet and regimen, and abstained from reading at night, and all exposure of the eyes to fatigue or strong lights. These precautions did not at first produce any decided change in the optical appearances occasioned by the disease; but in about eight months from its commencement I saw the coloured images and the luminous streaks disappear in a moment, indicating in the most unequivocal manner that the vacant space between the fibres or laminæ had been filled up with a fluid substance transmitted through the capsule from the aqueous humour. These changes took place at that period of life when the eye undergoes that change of condition which requires the use of glasses, and I have no doubt that the incipient separation of the laminæ would have terminated in confirmed cataract had it not been observed in time, and its progress arrested by the means already mentioned. Since that time the eye, though exposed to the hardest work, has preserved its strength, and is now as serviceable as it had ever been.

"If the cataract had made greater progress, and resisted the simple treatment which was employed, I should not have hesitated to puncture the cornea, in the expectation of changing the condition of the aqueous humour by its evacuation, or even of injecting distilled water or an albuminous solution into the aqueous cavity."—*Ibid.*

MIDWIFERY.

64. *Quadruple Pregnancy.*—An example of this has been communicated to the Academy of Medicine of France, by M. Pecot, of Besançon. The labour pains were severe, but ineffectual, and the ergot was administered, and in about an hour an infant was born, the head presenting. The size of the abdomen not being diminished, M. P. introduced a hand into the uterus and felt several sacs, each containing a fœtus. He grasped that one which presented nearest to the neck of the womb and withdrew it readily by the breech. A third child was immediately afterwards expelled by the uterine efforts alone, and finally, M. P. ruptured the last sac, and extracted the fourth fœtus by the breech. The placenta was so large as to require artificial delivery. No divisions could be perceived on its uterine surface, but the insertion of the four cords, and the separate attachment of the correspondent membranes were perfectly distinct. The injection of air, wax and mercury, all demonstrated the independent vascularity of the four placentæ notwithstanding their close junction. All four children died, three on the fourth and fifth days; the fourth on the twenty-fourth day. The last had been confided to a wet nurse. M. P. thinks that with great care and means of nursing, all might have been raised.—*Archives Générales*, Jan., 1838.

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65. *Delivery per Anum.*—Dr. Mekeln of Kettwig, was called to a female on the 1st of January, who had given birth to a strong and living infant through the anus, two hours before his arrival. The wound in the under part of the vagina, as well as that in the rectum, was of great size. The perineum, from the aperture of the anus to the vagina, was two-thirds torn, and very painful.

After three days both the urine and fæces passed by their ordinary channels.

On the fourth day suppuration occurred; the wounds healed, and the woman in due course recovered her strength. Dr. Mekeln declares that he could discover no defect in the organization of the parts. The midwife states that at her arrival, she found the head of the child in the rectum.—*Dublin Journal*, March, 1837, from *Sanitäts-Berichte des Königlichen Medicinal-Collegium's.*

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66. *Extraordinary size of an Infant at Birth.*—Dr. Thümen of Penzlaw, gives the case of a woman for whom he had brought nine children into the world by the aid of the forceps. She was strong and robust. Whilst pregnant of her tenth child she experienced much pain in the inguinal region, with uneasiness and loss of power in the whole right leg during labour. By great efforts the head of the child was freed, the shoulders remained behind, and resort was obliged to be had to the blunt hook to liberate them. Then it required still greater force to extricate the pelvis of the child. It was a boy, and weighed twenty pounds.—*Ibid.*, from *Beitragen zum Sanitäts-Beuchte des Potsdamer Regierungs'-Bezirks.*

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67. *Statistics of the Clinical Hospital of Midwifery of Berlin.*—The number of cases which occurred between the 1st of October, 1829, and the 31st of December, 1835, was 2,656. Of these births 2,035 were single; 21 were twin-births; so that the total number of children born was 2,077. The number of children born before the full period of gestation was 32, and the sexes were distributed in the following proportions:—Males, 1061; females, 1000; sex undetermined, 16. Of the mothers, 38 died in childbed. 1,913 children were born alive; 132 were born dead, and of the former 92 died within the first three weeks of their existence.

It is a remarkable fact, that of the children born *in* the hospital, only 1 in 30 were born dead; while of those born of mothers, treated by the pupils in their own houses, not less than 1 in 9 were born dead: a proof of the beneficial influence produced by prompt and efficient medical assistance, &c.

Presentations.—Regular presentation of the vertex, 1,911; face presentations, 18; presentation of the forehead, 5; buttocks, 47; knees, 2; feet, 2; irregular presentations, 54.

The labour was perfectly natural in 1,711 cases; the forceps was employed in 178; extraction of the fœtus in 55. In 4 cases irregular presentations of the child were very considerably improved by external manipulations, and by placing the mother in a commodious posture. In 57 cases turning by the feet, with or with-

out extraction, was had recourse to; and in 5 cases premature labour was brought on by art. Perforation of the head was performed in 6 cases; embryotomy in 2. The Cæsarean operation, before death, in 4 cases; after death in 2. Artificial extraction of the placenta was performed in 47 cases. In 57 artificial rupture of the membranes was thought necessary; and, finally, in three cases, abnormal conformation of the external parts rendered it necessary to divide the labia.

The following are some of the most remarkable circumstances connected with the art of midwifery, which occurred:—

Two of the patients were subject to habitual attacks of epilepsy. In the first case the disease was suspended during the first four months and a half of pregnancy; the paroxysms then returned, and continued in a very severe degree to the end of pregnancy. The labour, however, proceeded in the natural way, and the patient became speedily convalescent. In the second case the paroxysms were suspended during the whole course of pregnancy, and the labour was an easy one. Professor Busch assures us that, during his practice, he saw only a single case in which the epileptic attack came on during labour.

Rheumatism of the uterus occurred in several cases, but yielded to the appropriate treatment, without rendering it necessary to produce premature labour.

Menstruation during pregnancy.—This occurred once, twice, or even thrice during pregnancy, without affecting it in any pernicious manner. In two cases menstruation had not existed before conception, but set in, for the first time, after the women became pregnant.

Cholera.—In one case the woman was seized with this disease, and died in fifteen hours after the commencement of the attack. The motions of the child were felt ten hours previously to the mother's death. The Cæsarean operation was performed immediately, but the child was dead also.

Duration of Labour.—The longest labour continued for six days and six hours, and then terminated happily without the interference of art. In thirty cases labour was prolonged for three days and more without any injury to mother or child. The shortest labour terminated in 39 minutes.

Imperfect action of the uterus was very frequently observed. In all these cases, the powder of the secale cornutum was administered in doses of ten grains every ten or fifteen minutes. Of 175 cases in which it was given, its action on the uterus was manifest in 115. The ergot did not seem to exercise any unfavourable influence on the child, for, of 177 cases, only one was observed in which the death of the child could be traced to it as a cause.

Convulsions and Eclampsia.—These were observed in 11 cases; 6 were examples of true eclampsia; 5 of simple, though very severe convulsions. Of the former six, four patients died.—*Lancet*, from *Kleinert's Repert.*, April, 1837.

MEDICAL JURISPRUDENCE AND HYGIENE.

68. *Sloughing from Vaccination—Danger from numerous Punctures.*—Henry Rees, Esq., says that he has seen four infants destroyed by sloughing produced by vaccination. Three of the four had been vaccinated with a dozen or fifteen punctures in each arm. A fifth child he had some difficulty in saving. The arm had not begun to slough, but it was hard, purple and swollen, affected with intense inflammation, dependent, apparently, on the large number of punctures it had received.—*Lancet*, Oct. 21, 1837.

CHEMISTRY AND PHARMACY.

69. *Mercury detected in Saliva.*—Leopold Gmelin, of Heidelberg, has detected mercury in the saliva of a patient, salivated by mercurial frictions, but who had not taken any mercury by the mouth.—*Journ. de Pharm.* Dec. 1837, from *Annalen des Physik and Chem.*, Vol. XLI.

AMERICAN INTELLIGENCE.

Abortion of one twin, the other remaining. By Samuel Jackson, M. D., of Philadelphia, late of Northumberland.—A very intelligent lady, one most unlikely to be deceived, suffered an abortion at the period of three months, attended with considerable hemorrhage; and after recovering from the effects of this, she was surprised to find herself still affected with her regular morning sickness and other symptoms which, from some experience, she knew to be those of pregnancy. In this state of things, she came thirty miles to consult me, who had been her physician some years before. After the most minute inquiry, I was entirely satisfied that she had miscarried; it, therefore, came into mind, that she might have been pregnant of twins; that she had parted with one, and that the other was the cause of her present symptoms.

She was encouraged to believe this opinion, and the regular time proved our prediction true, by delivering her safely of a healthy child. That this lady did miscarry, I cannot question. She was too intelligent to be deceived, and too honest to deceive me. She saw the ovum as it came away, unlacerated, and saw the embryo, when she cut the membranes. This care she extended, because she was at least twelve miles from any physician, whom she was willing to employ.

But my success in this case led me into error in a subsequent one. A lady suffered a miscarriage, under the care of another physician, attended by dangerous hemorrhage, and, like the above-mentioned, she had for some time all her former indications of pregnancy. She consulted me, and, being her intimate friend, I fearlessly pronounced that she was pregnant of a remaining twin. Time, however, served me otherwise on this occasion, and brought forth nothing but disappointment. It is, however, in some measure possible that my opinion was correct, as a remaining ovum might have been exanimated by the excessive leucorrhœa that followed her miscarriage, and continued for a long time to excoriate and distress the patient.

Upon relating the first case to Joseph G. Nancrede, M. D., of this city, he informed me, that a similar one had occurred to himself, at the period of four and a half or five months; that he attended at the abortion, saw the fœtus, and knew the woman to be delivered of a full grown, healthy child, about four months afterwards.

We believe that these are novelties to most practitioners; but a single fœtus is *sometimes* saved after a copious flooding from its single placenta; and, surely, the expulsion of one fœtus, with the preservation of the other, is at least *à priori* a far more probable process.

Annual Report of the Interments in the City and County of New York, showing their Age, Sex, Colour and Places of Nativity, for the year 1837. *Also, a Table of Deaths, and the different Diseases, since the year* 1804. By Henry G. Dunnel, M. D., City Inspector.

Table I.—*The Annual Report of Interments in the City and County of New York, for 1837, commencing with the first day of January, and ending with the thirty-first day of December, shewing the disease, age, sex and colour, and in some instances the nativity of the deceased.*

Diseases of the Brain and Nervous System.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Whites.	Blacks.	Males.	Females.	Age 1 year and under	Between 1 and 2.	2 and 5	5 and 10	10 and 20	20 and 30	30 and 40	40 and 50	50 and 60	60 and 70	70 and 80	80 and 90	90 and 100	Unknown.	
Brain, Inflammation of . . .	13	13	14	16	10	12	12	18	21	9	8	15	161	155	6	97	64	27	16	25	10	15	26	19	14	8	0	0	0	0	1	
„ Dropsy of	51	24	32	37	24	21	23	51	30	26	23	23	365	343	22	203	162	132	103	98	20	6	3	0	1	0	0	0	1	0	1	
„ Tumour within the . .	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Apoplexy, ...	14	9	16	13	11	11	7	7	8	3	15	15	129	118	11	93	36	0	0	0	0	3	14	35	28	26	9	10	3	0	1	Note A.
Asphyxy, ...	1	0	1	0	1	1	1	1	1	1	1	1	10	8	2	4	6	6	0	1	0	1	1	1	0	0	0	0	0	0	0	
„ from Charcoal fumes,	0	1	0	0	1	0	0	0	0	0	0	2	4	3	1	3	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	
Palsy, ...	6	8	2	5	4	1	7	5	0	3	6	2	49	43	6	25	24	0	0	1	1	1	4	10	9	4	6	7	4	2	0	
Convulsions, ...	69	60	74	52	61	47	126	115	58	53	50	51	816	778	38	432	384	652	65	54	12	10	10	3	2	2	1	0	0	0	5	
Epilepsy, ...	0	2	1	0	0	3	5	0	3	2	1	2	19	18	1	11	8	0	0	0	1	3	4	5	4	1	1	0	0	0	0	
Chorea or St. Vitus' dance, . .	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Hydrophobia, ...	1	1	1	0	0	0	0	0	0	0	0	0	3	3	0	2	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	
Hypochondria, ...	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
Insanity, ...	0	0	5	5	4	3	0	2	0	1	0	0	20	15	5	12	8	0	0	0	0	0	6	3	8	0	2	0	0	0	1	
„ Puerperal, ...	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Lockjaw, ...	1	0	1	0	0	0	0	1	0	2	2	0	7	6	1	5	2	0	0	0	1	2	3	1	0	0	0	0	0	0	0	
Neuralgia, or Nerve Ache, . .	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
Respiratory System.																																
Croup, ...	17	12	12	14	7	13	4	9	11	14	20	18	151	145	6	77	74	69	28	41	11	1	0	0	0	0	1	0	0	0	0	
Hooping Cough, ...	7	5	7	3	1	5	4	7	4	12	7	1	63	62	1	26	37	18	18	23	4	0	0	0	0	0	0	0	0	0	0	
Lungs, Bleeding from . . .	2	1	0	1	2	1	4	2	0	1	0	2	16	12	4	12	4	0	0	0	1	2	4	4	3	1	1	0	0	0	0	
„ and Membranes Inflamed,	51	50	78	63	37	41	34	28	27	30	39	56	534	469	65	305	229	132	91	58	21	19	52	61	45	17	24	11	0	0	3	
„ Gangrene of	0	0	1	1	0	0	0	2	2	0	0	0	6	6	0	3	3	0	0	1	1	1	2	1	0	0	0	0	0	0	0	
„ Consumption of . . .	142	152	159	163	133	123	101	109	119	72	88	97	1458	1293	165	719	739	31	47	47	54	108	399	328	208	129	73	26	5	0	3	Note B.
„ Asthma, ...	1	4	1	0	1	0	0	2	4	1	2	0	14	12	2	8	6	1	1	1	0	0	2	1	1	2	4	1	0	0	0	
Chest, Inflammation of , . .	18	10	16	9	6	5	4	5	4	3	9	6	95	80	15	48	47	40	22	14	0	2	6	2	2	1	2	3	0	0	1	
„ Dropsy of	2	6	7	2	2	3	2	4	3	4	1	2	38	34	4	24	14	4	3	1	2	1	5	3	8	7	3	0	1	0	0	
Sternalgia, or Breast Pang, . .	1	1	1	0	0	0	0	1	1	0	0	0	5	5	0	4	1	0	1	0	0	0	0	0	1	0	1	2	0	0	0	
Circulatory System.																																
Heart, Inflammation of . . .	1	0	1	0	0	1	0	2	0	0	1	2	7	7	0	3	4	0	1	0	1	1	3	0	1	0	0	0	0	0	0	
„ Organic disease of . .	2	3	1	3	1	1	3	5	5	5	5	3	37	33	4	22	15	2	2	1	0	2	8	10	1	4	5	1	0	0	1	

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.	Whites.	Blacks.	Males.	Females.	Age 1 year and under.	Between 1 and 2	2 and 5	5 and 10	10 and 20	20 and 30	30 and 40	40 and 50	50 and 60	60 and 70	70 and 80	80 and 90	90 and 100	Unknown.	
Cyanosis, or Blue Skin, . . .	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Fever, (Type not mentioned,) .	7	8	12	17	9	20	15	14	6	9	10	3	130	102	28	64	66	6	1	13	7	11	39	20	12	13	6	2	0	0	0	
„ Intermittent, ...	0	0	3	0	2	1	3	0	2	3	2	0	16	14	2	5	11	0	3	3	1	2	1	2	1	0	1	1	1	0	0	
„ Remittent and Bilious, .	3	0	7	7	5	8	8	9	11	12	3	2	75	71	4	37	38	5	5	4	4	4	16	18	9	3	5	1	1	0	0	
„ Typhus, ...	6	9	30	37	55	45	47	28	20	24	22	15	338	269	69	178	160	0	2	4	5	30	106	85	44	36	19	6	0	0	1	Note C.
Eruptive Fevers.																																
Scarlet Fever, ...	110	110	88	48	48	20	12	22	25	23	27	46	579	576	3	294	285	72	125	244	97	21	16	0	0	2	0	0	0	0	2	
Measles, ...	9	9	5	12	13	18	48	63	25	16	6	14	238	233	5	136	102	52	66	98	14	2	6	0	0	0	0	0	0	0	0	
Small-pox, ...	30	12	16	17	17	9	5	9	12	1	17	11	164	144	20	94	70	32	25	40	8	12	28	12	4	2	0	0	0	0	1	
Varioloid, ...	2	0	1	0	0	0	0	2	0	0	1	0	6	5	1	1	5	1	1	1	0	1	2	0	0	0	0	0	0	0	0	
Chicken Pox, ...	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Erysipelas, ...	2	3	4	1	9	2	0	3	2	0	1	1	28	26	2	14	14	10	0	0	1	0	3	5	3	2	2	1	1	0	0	
Aphthæ, or Sprue, ...	3	1	1	2	1	1	6	4	8	1	2	2	32	32	0	19	13	30	2	0	0	0	0	0	0	0	0	0	0	0	0	
Scalled Head, ...	0	0	0	0	0	0	1	0	0	0	0	1	2	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
Aneurism, ...	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	
„ of the Aorta, . . .	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Bleeding, (from parts not named,)	2	1	2	2	1	3	0	0	5	1	5	3	25	21	4	14	11	2	0	1	0	0	9	6	3	4	0	0	0	0	0	
Dropsy, (of organs not named,)	15	15	12	14	17	5	13	14	9	17	16	3	150	131	19	80	70	7	4	17	7	7	21	17	32	21	13	3	0	0	1	
Digestive System.																																
Ptyalism, or Salivation, . . .	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
Pylorus, Scirrhus of	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
Stomach, Bleeding from . . .	0	0	0	2	0	1	0	0	0	1	1	0	5	5	0	3	2	0	0	0	0	0	3	1	1	0	0	0	0	0	0	
„ Indigestion or Dyspepsia of	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
„ and Bowels Inflamed,	19	12	7	17	21	17	29	24	27	18	12	17	220	203	17	112	108	65	21	24	10	8	22	24	23	7	7	6	1	0	2	
„ Cramp of	0	3	0	0	0	0	0	0	1	0	0	0	4	4	0	2	2	0	0	0	0	1	0	1	1	1	0	0	0	0	0	
„ Cancer of	0	0	0	0	1	0	0	0	0	0	1	1	3	3	0	3	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	
Bowels, Rupture of	0	0	1	0	1	1	0	0	0	1	2	0	6	4	2	6	0	0	0	0	0	0	1	1	1	1	0	2	0	0	0	
„ Colic of	0	0	1	0	3	1	0	1	2	2	0	0	10	9	1	4	6	1	2	0	0	0	1	2	3	1	0	0	0	0	0	
Cholera Morbus, ...	0	0	0	2	0	1	4	4	8	1	0	0	20	17	3	12	8	2	3	2	1	1	3	0	4	0	3	1	0	0	0	
„ Infantum, ...	0	0	1	0	2	6	39	101	86	15	2	1	253	246	7	130	123	159	74	20	0	0	0	0	0	0	0	0	0	0	0	
Diarrhœa, ...	4	3	2	3	5	5	17	49	29	17	13	4	151	143	8	79	72	23	29	22	8	4	17	19	10	8	7	2	1	0	1	Includes
Dysentery, ...	2	9	9	1	2	5	8	35	27	20	5	1	124	120	4	78	46	21	19	20	6	4	8	15	16	6	3	5	0	0	1	Atrophy
Marasmus, or Emaciation, . .	21	14	19	20	13	10	29	39	41	33	26	27	292	257	35	155	137	148	54	21	7	1	8	15	9	9	15	4	1	0	0	and
Teething, ...	19	22	16	14	17	24	30	51	32	10	1	6	242	235	7	129	113	104	135	3	0	0	0	0	0	0	0	0	0	0	0	Debility.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.	Whites.	Blacks.	Males.	Females.	Age 1 year and under.	Between 1 and 2	2 and 5	5 and 10	10 and 20	20 and 30	30 and 40	40 and 50	50 and 60	60 and 70	70 and 80	80 and 90	90 and 100	Unknown.	
Worms,	0	1	6	4	3	2	3	2	1	3	0	2	27	26	1	12	15	4	1	12	10	0	0	0	0	0	0	0	0	0	0	
Ulceration of Intestines,	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Rectum, Cancer of	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
„ Stricture of	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Fistula in Ano,	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Liver, Inflammation of	7	1	11	5	3	5	2	1	4	6	1	5	51	45	0	24	27	3	0	2	3	1	12	10	9	0	2	2	0	0	1	
„ Scirrhus of	0	1	0	0	0	0	0	0	0	0	1	0	2	2	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
Jaundice,	1	0	1	3	1	5	0	2	2	1	0	4	20	20	0	11	9	6	0	2	0	0	2	4	3	1	1	0	1	0	0	
Spleen, Inflammation of	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
Urinary and Genital System.																																
Bladder, Inflammation of	0	0	0	0	0	0	1	0	0	1	1	0	3	3	0	2	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	
Kidneys, Inflammation of	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Diabetes,	0	0	0	0	0	1	0	1	0	0	0	1	3	3	0	3	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	
Gravel or Stone,	0	0	1	0	0	1	0	0	0	0	0	1	3	3	0	3	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	
Fistula in Perinoe,	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
Womb, Inflammation of	1	0	0	0	0	0	0	0	0	1	0	1	3	3	0	0	3	0	0	0	0	1	2	0	0	0	0	0	0	0	0	
„ Cancer and Scirrhus of	0	0	1	0	1	2	1	1	0	0	0	0	6	6	0	0	6	0	0	0	0	0	2	1	1	1	1	0	0	0	0	
„ Dropsy of	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
„ Furor of	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
„ Polypus of	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
„ Rupture of	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Child-bed,	4	2	6	2	4	5	3	1	3	4	3	1	38	35	3	0	38	0	0	0	0	0	20	14	4	0	0	0	0	0	0	Note D.
Puerperal Fever, or Peritonitis,	4	2	3	4	0	2	2	0	2	2	2	3	26	26	0	0	26	0	0	0	0	0	12	14	0	0	0	0	0	0	0	Note E.
Ovaria, Disease of	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
„ Dropsy of	0	0	0	0	0	0	1	0	0	0	0	1	2	1	1	0	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	
Mismenstruation,	0	0	2	0	0	0	1	0	0	0	0	0	3	3	0	0	3	0	0	0	0	1	2	0	0	0	0	0	0	0	0	
Inflammation of parts not named,	0	0	1	2	1	1	3	2	0	1	0	0	11	8	3	3	8	1	2	2	0	1	3	1	0	1	0	0	0	0	0	
„ of Throat,	2	1	2	3	2	1	2	2	1	2	4	0	22	21	1	10	12	6	7	3	2	0	2	1	0	1	0	0	0	0	0	
„ of Knee-joint,	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
Rheumatism,	2	2	3	5	0	2	2	0	1	1	1	0	19	16	3	8	11	1	0	1	1	1	6	4	2	0	1	2	0	0	0	
Gout,	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
White Swelling,	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Morbus Coxarius; Hip Disease,	0	0	0	0	0	1	0	0	1	0	0	1	3	3	0	3	3	0	0	0	0	2	1	0	0	0	0	0	0	0	0	

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Whites.	Blacks.	Males.	Females.	Age 1 year and under.	Between 1 and 2	2 and 5	5 and 10	10 and 20	20 and 30	30 and 40	40 and 50	50 and 60	60 and 70	70 and 80	80 and 90	90 and 100	Age 105.	Unknown.	
Spinal Disease,	0	0	1	0	0	0	1	0	2	0	0	2	6	6	0	3	3	0	0	2	1	1	1	1	0	0	0	0	0	0	0	0	
" Injury,	0	0	1	0	1	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	
Tumour,	0	0	1	0	0	0	0	1	1	0	0	1	4	3	1	3	1	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	
Ulcers,	0	2	1	0	1	0	0	1	3	0	0	2	10	10	0	8	2	0	0	0	2	0	2	1	2	1	2	0	0	0	0	0	
Abscess,	3	0	5	2	0	3	5	1	1	3	0	1	24	23	1	11	13	7	2	0	0	4	3	3	1	2	0	1	0	0	0	1	
" Lumbar,	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cancer, of parts not named,	0	2	5	0	1	0	0	0	1	1	3	1	14	13	1	2	12	0	0	0	0	0	0	2	4	3	1	3	0	0	0	1	
Mortification of do.	4	2	0	1	4	8	6	1	5	1	0	1	33	30	3	17	16	1	1	5	2	1	6	7	5	1	2	2	0	0	0	0	
Lues Venerea,	2	3	0	0	1	0	1	1	0	0	1	2	11	6	5	4	7	2	0	0	0	2	3	3	1	0	0	0	0	0	0	0	
Necrosis,	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
Osteo Sarcoma,	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
Rickets,	0	1	0	1	0	0	0	0	1	0	0	0	3	2	1	1	2	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	
Scrofula,	1	2	0	0	1	0	3	3	2	4	0	2	18	16	2	10	8	4	2	5	0	1	2	2	1	0	0	0	0	0	0	1	
Unknown Disease,	0	6	7	7	3	2	4	5	3	7	7	6	57	50	7	29	28	14	1	1	1	0	10	13	8	3	1	1	0	0	0	4	
Drinking Cold Water,	0	0	0	0	0	0	1	1	0	0	0	0	2	2	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	
Intemperance, and	5	7	4	9	6	4	6	3	1	1	2	2	50	37	13	29	21	0	0	0	0	0	9	20	15	4	1	0	0	0	0	1	
Delirium Tremens,	11	8	13	11	7	7	8	3	3	1	3	3	78	60	18	56	22	0	0	0	0	0	18	31	22	3	4	0	0	0	0	0	
Suicide,	1	1	4	3	7	3	5	8	4	3	2	1	42	42	0	25	17	0	0	0	1	4	13	12	9	3	0	0	0	0	0	0	Note F.
Destitution and Exposure,	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
Casualties,	15	8	11	3	8	5	5	1	10	6	5	2	79	72	7	65	14	1	1	3	5	3	22	20	12	7	3	1	0	0	0	1	Note G.
Burned or Scalded,	4	9	8	6	2	2	2	0	4	3	4	5	49	45	4	19	30	5	7	13	10	3	5	0	2	1	0	1	1	0	0	1	
Drowned,	12	1	7	8	27	18	8	18	9	9	1	3	121	113	8	104	17	0	0	4	10	13	26	27	29	7	3	0	0	0	0	2	
Death from accidental Poisoning,	0	1	2	0	0	1	2	3	0	1	1	0	11	11	0	5	6	0	1	2	0	1	5	1	1	0	0	0	0	0	0	0	
Fracture,	0	0	0	0	2	3	1	0	1	0	1	1	9	9	0	8	1	0	1	0	1	0	3	3	0	1	0	0	0	0	0	0	
Killed or Murdered,	1	1	0	0	0	3	0	1	2	1	1	0	10	9	1	8	2	1	0	0	0	0	0	4	4	0	0	0	0	0	0	1	
Old Age,	13	11	9	22	10	7	12	9	11	7	7	4	122	117	5	50	72	0	0	0	0	0	0	0	0	2	6	51	49	13	1	0	Note H.
Malformation,	1	0	0	0	2	1	1	1	5	7	3	9	30	27	3	19	11	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Deaths Total,	751	669	784	706	647	593	747	923	766	556	507	533	8182	7480	702	4369	3813	1946	1001	961	369	334	1062	943	657	375	243	162	73	15	1	40	
Still-born and Premature,*	51	44	64	44	41	40	44	42	38	51	54	37	550	505	45	349	193																
Interments, Total,	802	713	848	750	688	633	791	965	804	607	561	570	8732	7985	747	4718	4006																

* Sex not named, 8.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Men, ...	186	143	208	210	184	166	165	167	145	134	111	122	1941
Women, ...	129	136	183	175	173	133	142	135	129	100	90	105	1630
Boys, ...	254	232	236	196	174	166	280	368	274	206	203	182	2768
Girls, ...	233	202	221	169	157	168	204	295	256	167	157	161	2389

Places of Nativity of those who died in 1837.

United States,	6640	Poland,	1
Ireland,	1206	Prussia,	1
England,	301	Russia,	1
Scotland,	74	Norway,	1
Wales,	6	West Indies,	17
Germany,	198	South America,	3
Holland,	3	Italy,	4
France,	45	Canada,	8
Bavaria,	1	Nova Scotia,	5
Spain,	8	China,	1
Switzerland,	3	Africa,	2
Sweden,	14	At Sea,	3
Denmark,	2	Unknown,	184

	Natives of Great Britain.	*Natives of European Continent.*
Note A,	49	7
B,	542	50
C,	151	22
D,	20	2
E,	16	00
F,	15	7
G,	41	7
H,	44	10

The Interments were in the Cemeteries belonging to the following Denominations.

The Public or Potters Field,	2139
Roman Catholic,	2707
Methodist,	1262
Presbyterian,	1079
Episcopalian,	905
Dutch,	406
Baptist,	149
Friends,	56
Hebrews,	29

The Population of New York, according to the last Census, in 1835, *was*

Males,	131,624
Females,	138,464
Total,	270,088
Persons of Colour,	15,197
Whites,	254,892

Table II.—*A true Table of the Deaths that have occurred in the City of New York, from the commencement of making any returns to the City Inspector's Office.*

DISEASES.	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820
Inflammation of Brain,	17	16	15	17	18	12	21	28	19	7	17	16	18	19	24	22
Dropsy of Brain,	16	22	30	28	28	42	28	55	48	50	56	101	87	106	119	147
Apoplexy,	31	20	38	23	20	45	47	34	33	37	57	53	46	46	67	54
Palsy,	15	29	23	16	22	28	20	19	26	27	25	22	29	46	40	41
Convulsions,	192	195	221	161	164	145	162	174	124	140	162	157	184	209	190	208
Epilepsy,	7	16	8	0	3	3	3	3	2	2	1	5	3	4	9	6
Catalepsy,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hysteria,	0	0	0	0	0	0	0	1	1	0	0	0	2	1	0	1
Chorea, or St. Vitus' Dance,	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0
Asphyxia,	0	0	0	0	0	0	0	1	0	0	1	2	2	0	3	0
Neuralgic, or Nervous Dis.	0	0	0	0	0	0	0	0	2	1	7	6	10	3	4	3
Lockjaw,	6	7	2	4	4	3	2	4	5	3	8	4	3	5	4	2
Hydrophobia,	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1
Insanity,	5	7	7	7	7	5	10	8	4	8	15	12	11	13	12	6
Respiratory System.																
Croup,	70	106	101	94	102	82	136	111	76	78	83	82	60	74	68	97
Hooping Cough,	19	72	35	35	50	44	43	82	89	50	95	44	11	123	55	19
(A.) Lungs or Mem. Inflam.	102	127	138	100	106	134	103	225	202	66	20[illegible]	216	145	178	141	155
Dropsy of the Chest,	0	0	0	0	0	13	32	19	8	6	14	20	22	47	24	26
Bleeding from the Lungs,	4	3	4	6	4	4	4	5	5	3	7	8	6	8	5	3
Asthma,	3	11	3	5	4	13	11	6	18	6	13	10	13	6	8	7
Consumption,	462	354	464	429	413	569	595	669	562	572	618	678	574	591	577	625
Circulatory System.																
Heart, Organic Disease of	0	0	0	0	0	0	1	2	2	4	0	0	0	0	0	0
Fever, (Type not named,)	0	0	0	0	0	0	0	0	10	19	17	12	12	47	66	130
,, Intermittent,	4	7	3	5	12	6	8	10	6	2	5	5	10	7	3	1
,, Remittent and Bilious,	22	20	12	13	16	9	29	37	18	14	3	14	27	16	20	60
,, ,, Malig. or Yellow	270	0	0	0	13	0	0	0	0	0	0	0	1	0	23	0
,, Inflammatory,	9	6	3	1	6	4	3	13	3	1	2	2	7	10	5	12
,, Typhus and Nervous,	78	96	108	65	73	65	156	171	121	142	120	100	163	264	165	143
,, Hectic,	2	3	5	3	3	1	1	1	3	6	2	6	3	3	1	1
Eruptive Fevers.																
Scarlet,	4	4	2	4	9	1	0	0	1	1	0	0	3	0	5	5
Measles,	0	0	1	64	2	2	2	9	5	15	18	19	20	18	10	74
Small-pox,	62	48	29	62	66	4	117	21	2	2	94	179	14	19	0	0
Water,	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Erysipelas,	5	7	4	0	2	3	2	1	0	2	1	4	6	3	4	2
Herpes,	0	0	0	0	0	0	0	0	0	0	1	1	2	1	0	1
Aphthæ, or Sprue,	23	36	34	16	22	12	30	30	27	7	15	23	20	23	22	25

DISEASES.	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	Total	Mortality of each disease, as compared with other diseases, excluding casualties, suicides and still-births, as 1 in
Inflammation of Brain,	28	22	47	46	107	100	77	109	83	71	71	99	101	120	150	159	1676	72.
Dropsy of Brain,	152	141	144	218	196	189	235	236	258	289	319	344	305	347	382	268	4986	24.2
Apoplexy,	45	60	58	52	147	69	117	94	98	90	121	81	100	135	68	89	2075	58.11
Palsy,	37	36	31	40	62	44	34	29	29	45	42	36	28	39	52	45	1057	114.1
Convulsions,	164	172	209	237	296	290	337	342	350	447	444	504	523	773	689	778	9343	12.91
Epilepsy,	10	6	4	10	6	10	10	14	11	8	4	11	15	10	15	0	219	551.07
Catalepsy,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Hysteria,	0	0	1	2	1	0	1	0	0	0	2	2	5	3	7	0	30	4022.8
Chorea, or St. Vitus' Dance,	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	7	17240.
Asphyxia,	1	6	0	1	4	8	3	4	5	2	5	10	2	4	10	0	74	1630.86
Neuralgic, or Nervous Dis.	4	4	7	5	9	2	8	4	4	3	9	2	1	0	2	0	100	1206.84
Lockjaw,	7	5	8	11	14	9	9	7	13	7	8	3	4	3	7	10	191	631.85
Hydrophobia,	0	0	0	0	0	0	0	0	0	1	1	0	1	0	2	3	11	10971.
Insanity,	6	6	4	7	26	23	20	7	15	13	23	4	16	14	15	31	367	328.83
Respiratory System.																		
Croup,	125	109	94	139	133	154	171	155	171	178	203	179	168	198	173	177	3947	30.57
Hooping Cough,	92	35	31	116	69	126	61	157	52	97	181	63	105	141	172	152	2516	47.96
(A.) Lungs or Mem. Inflam.	157	166	184	216	328	360	257	246	319	228	385	428	406	535	472	551	7578	15.92
Dropsy of the Chest,	27	30	33	44	37	45	40	49	40	65	45	43	35	58	31	30	883	136.67
Bleeding from the Lungs,	4	8	4	8	9	5	4	8	7	13	9	5	7	9	5	12	196	615.73
Asthma,	12	4	6	5	12	14	6	2	7	42	33	8	8	8	13	11	328	367.93
Consumption,	715	624	683	736	843	820	829	906	880	974	1033	1415	1251	1471	1437	1514	24883	4.85
Circulatory System.																		
Heart, Organic Disease of	0	0	0	0	0	0	0	0	0	0	0	0	0	22	20	28	79	1527.64
Fever, (Type not named,)	121	50	30	32	120	84	132	91	55	36	69	80	72	53	47	90	1475	81.81
,, Intermittent,	7	8	14	15	10	18	20	40	20	15	16	7	8	13	22	0	327	369.
,, Remittent and Bilious,	72	62	50	42	69	85	77	83	62	67	103	66	52	85	65	110	1480	81.51
,, ,, Malig. or Yellow	3	166	1	0	0	0	0	0	0	0	0	0	0	0	0	0	477	253.
,, Inflammatory,	3	2	2	8	3	7	1	5	5	5	4	3	1	4	1	2	143	843.94
,, Typhus and Nervous,	128	97	89	82	228	138	98	132	57	53	54	84	62	106	47	117	3602	33.5
,, Hectic,	0	0	0	2	0	1	0	2	1	2	2	3	1	1	0	0	59	2043.
Eruptive Fevers.																		
Scarlet,	3	1	2	3	10	24	4	11	188	246	258	221	179	418	174	202	1983	60.85
Measles,	109	1	117	100	53	31	172	28	91	22	39	290	38	212	82	443	2117	57.
Small-pox,	0	0	18	394	40	58	149	93	16	176	224	89	25	233	351	173	2578	43.75
Water,	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	7	17240.
Erysipelas,	3	8	13	14	20	18	15	12	18	19	9	13	7	26	29	19	289	417.23
Herpes,	1	2	0	0	2	0	1	2	2	0	4	0	0	0	0	0	20	6034.2
Aphthæ, or Sprue,	25	14	21	24	18	27	27	22	42	35	46	32	41	40	23	0	802	150.47

DISEASES.	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	Total.	Comp. as 1 in
Leprosy,	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	6	20114.
Scalded Head,	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	40228.
Aneurism,	0	0	0	0	1	1	1	0	1	1	3	3	2	0	2	2	1	2	0	2	4	3	1	1	3	4	5	5	6	1	4	0	56	2155.07
Bleeding fm. pts. not nam.	6	10	5	0	5	4	6	5	6	1	2	6	12	9	9	15	14	7	9	14	16	15	12	13	26	15	13	10	17	19	27	0	328	367.81
Dropsy of organs,	83	89	98	91	79	105	88	85	94	89	93	90	78	88	80	116	108	74	114	115	110	116	126	118	138	111	132	130	121	181	137	154	3431	35.17
Digestive System.																																		
Stomach, bleeding from,	1	1	0	0	0	0	0	3	0	0	1	0	1	0	0	2	1	0	0	1	1	1	0	0	1	0	1	1	0	0	1	4	21	5746.9
,, Dyspep. or Indigest.	0	0	1	0	3	0	0	24	4	3	0	2	0	8	3	4	5	4	6	5	5	8	7	14	9	7	1	8	6	5	2	8	122	907.24
,, and Bowels, Inflam. of	23	48	43	29	44	38	44	6	31	25	26	53	61	61	47	64	60	73	88	123	117	114	118	155	161	195	231	226	222	233	197	276	3252	37.11
,, Cramp of	1	1	4	5	4	5	5	4	4	3	4	12	4	9	7	9	3	5	8	8	9	15	19	13	11	7	13	16	15	9	4	5	241	500.76
,, Colic,	0	4	9	0	8	11	16	5	7	4	1	10	6	4	6	10	12	6	4	10	6	5	8	6	6	10	7	7	9	4	11	3	215	561.32
Cholera, the	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3513	0	971	0	0	4484	26.91
,, Morbus,	19	9	8	7	5	8	12	4	13	9	9	24	34	64	42	34	14	21	27	22	26	23	24	19	14	10	0	93	10	50	21	24	699	172.82
,, Infantum,	195	166	162	120	138	137	158	102	69	40	27	1	12	68	133	169	114	115	156	102	151	222	238	167	119	168	172	334	129	475	231	286	4870	24.77
Diarrhœa,	16	1	7	0	26	23	16	7	22	18	34	21	47	46	50	46	49	56	64	55	61	75	94	110	90	83	142	104	55	54	58	73	1606	75.14
Dysentery,	60	52	30	24	17	12	29	37	145	72	84	71	71	141	219	243	142	109	98	120	138	193	199	155	126	128	156	136	87	67	91	116	3368	35.83
(Note B.) Marasmus,	111	202	171	132	99	0	0	2	6	1	11	52	69	125	148	151	145	115	118	144	201	178	187	250	247	293	670	201	146	180	136	193	4384	27.52
Teething,	30	44	35	37	48	45	44	38	37	35	48	31	22	39	31	19	30	37	37	46	61	62	45	86	75	102	99	110	118	205	135	277	2108	57.25
Worms,	34	45	60	43	43	42	50	44	24	20	43	25	29	28	17	20	18	17	19	13	24	20	13	16	18	28	27	41	39	56	43	48	997	121.04
Rupture,	0	0	0	3	1	1	1	3	2	3	1	2	1	1	1	2	5	7	3	6	3	2	4	3	4	7	9	7	11	7	6	15	121	997.38
Liver, Inflam. and Disease,	7	11	18	3	7	22	14	11	7	13	19	17	41	29	28	24	27	29	31	37	56	43	57	56	68	107	60	44	36	50	44	82	1098	109.91
,, Scirrhus of	0	0	0	0	0	0	0	0	0	0	3	2	3	1	5	3	2	1	3	1	1	1	3	2	1	0	17	37	14	2	13	0	115	1049.42
Jaundice,	4	4	9	13	5	0	7	4	8	7	11	11	10	10	8	19	16	10	14	12	15	20	10	10	6	9	16	14	17	10	8	0	323	373.64
Genital System.																																		
Bladder and Kidneys, Infl.	0	0	1	0	3	3	3	1	7	2	2	4	4	7	3	3	2	2	3	3	3	3	2	5	4	3	6	5	1	8	17	5	115	1049.42
Gravel or Stone,	3	0	2	3	6	4	1	1	1	1	5	4	3	7	3	4	0	3	5	4	3	4	2	5	2	3	5	2	4	8	3	1	102	1183.17
Diabetes,	1	0	1	0	0	2	0	1	2	0	0	0	0	0	0	0	2	0	2	2	1	1	0	0	1	2	1	1	1	0	6	1	28	4310.14
Mismenstruation,	0	0	3	1	0	1	1	2	0	2	0	1	1	2	2	3	1	1	1	0	0	1	0	1	0	1	4	4	1	3	0	0	37	3261.75
Child-bed and Puerp. Fever	16	15	12	23	24	21	25	14	16	13	20	28	20	11	19	27	23	24	21	50	35	56	48	47	31	59	36	60	39	68	61	76	1038	115.3
Inflammations.																																		
Quinsy,	6	21	22	17	2	2	4	0	0	0	14	5	9	4	10	7	15	16	8	15	8	7	8	13	18	4	3	2	5	4	1	21	·261	462.39
Sore Throat,	8	0	0	0	11	9	10	11	6	4	4	4	1	5	11	5	10	17	10	21	33	37	31	24	44	32	37	22	16	38	25	0	486	247.49
Rheumatism,	3	3	4	5	4	5	4	5	5	3	1	8	4	8	4	6	7	1	6	5	14	6	9	12	9	11	5	7	6	7	10	8	195	618.89
Gout,	2	3	1	0	0	3	2	1	4	2	2	4	5	4	2	1	2	2	1	2	2	1	1	0	0	0	3	2	2	2	4	6	66	1828.54
White Swelling,	0	0	0	0	3	1	5	4	0	1	1	0	0	0	0	0	0	0	0	3	5	4	1	6	4	2	0	0	2	2	12	3	59	2045.49
Morbus Coxarius, [Dis. Hip,]	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	603.42
Abscess,	5	3	7	6	8	5	4	2	2	5	1	10	13	13	13	5	10	12	10	17	12	13	11	10	15	8	18	5	11	13	21	13	301	400.91
Do. Lumbar,	0	0	0	0	0	0	0	1	3	0	3	4	1	1	2	2	3	3	2	1	2	2	4	3	0	1	2	2	0	0	0	0	. 42	2873.42
Tumour,	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	1	0	1	0	2	1	2	4	2	3	5	4	4	5	2	40	3017.4
Ulcers,	5	6	4	1	3	2	4	2	0	3	0	3	5	7	5	11	13	9	12	11	6	6	7	15	9	1	3	1	4	8	8	11	185	652.34
Carbuncle,	0	0	0	1	0	2	1	0	0	1	1	2	0	1	1	1	1	0	1	1	3	1	1	2	3	0	0	0	1	0	1	0	26	4641.69
Caries,	0	0	0	1	1	2	2	5	6	8	4	0	1	1	2	0	0	0	0	0	1	0	1	1	0	1	0	3	1	0	0	0	41	2943.51
Mortification,	9	0	0	20	14	9	10	19	9	11	16	17	19	12	17	11	16	9	10	13	21	14	17	11	22	14	18	23	19	16	8	23	447	·269.98

DISEASES.	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820
Scurvy,	1	0	6	1	2	1	0	2	0	0	0	0	0	0	1	0
Rickets,	0	0	0	1	0	0	0	2	1	0	0	1	2	1	0	1
Scrofula,	4	4	4	4	7	1	1	4	8	4	4	9	14	19	12	19
Lues Venerea,	14	12	15	10	13	22	18	10	4	7	8	11	7	14	13	10
Fracture,	0	0	4	2	7	4	0	1	3	3	4	5	1	1	1	2
Old Age,	46	57	51	49	62	88	85	85	60	56	73	73	96	92	82	100
Drinking Cold Water,	11	0	1	1	0	0	28	0	1	0	2	1	2	16	6	10
Intemp. and Delir. Trem.	17	11	14	18	28	30	19	18	9	7	12	30	40	38	35	28
Suicide,	26	15	16	8	16	8	9	5	11	6	5	15	18	24	27	15
Unknown Disease,	26	28	45	21	16	28	53	44	33	36	35	68	34	64	103	100
Casualties, (Including reports as Burned, Drowned, Frozen and Killed,	78	87	77	84	99	106	77	99	88	70	104	99	82	120	110	103
Note C. Malformation,	0	0	0	0	1	0	0	0	1	4	1	0	0	1	2	1
Deaths in each year, Total,	2297	2174	2236	1950	2038	2073	2431	2472	2207	1881	2405	2651	2409	3106	3008	3326
Still-born and Premature,	47	51	76	64	70	94	93	81	76	93	102	88	118	159	168	189

DISEASES.	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	Total.	Comp. as 1 in
Scurvy,	0	0	1	2	0	0	0	0	2	2	0	0	0	0	0	0	21	5746.9
Rickets,	2	0	1	1	1	0	2	0	1	3	2	0	0	4	0	0	26	4641.69
Scrofula,	12	12	15	15	14	9	15	17	9	8	17	17	10	13	9	19	329	366.78
Lues Venerea,	9	5	5	12	15	7	6	14	7	6	4	4	15	13	29	33	372	324.47
Fracture,	4	5	3	2	7	12	6	3	3	1	9	2	1	8	5	6	115	1049.42
Old Age,	122	115	134	151	203	201	202	195	181	106	135	154	107	136	104	131	3532	34.19
Drinking Cold Water,	2	4	0	3	77	0	21	9	2	19	4	3	4	40	0	7	274	440.45
Intemp. and Delir. Trem.	64	44	43	70	84	55	73	75	60	75	119	119	76	110	165	142	1728	69.84
Suicide,	16	13	18	19	14	29	23	22	33	29	23	29	30	33	29	33	617	
Unknown Disease,	80	54	79	94	160	156	164	99	98	104	100	133	112	126	67	112	2472	48.82
Casualties, (Including reports as Burned, Drowned, Frozen and Killed,	106	127	120	120	156	150	151	158	131	146	178	178	236	241	263	256	4200	
Note C. Malformation,	2	3	0	1	1	1	0	0	1	0	0	5	8	1	10	7	51	2366.35
Deaths in each year, Total,	3368	3026	[illegible]221	4091	4774	4671	4890	4843	4734	5198	5991	9975	5354	3590	6608	7503	6925	
Still-born and Premature,	174	205	223	250	244	302	291	338	360	339	372	384	392	492	474	506		

Note A.—Among the deaths from Inflammation of the Lungs and Membranes are classed deaths reported by Pleurisy, Peripneumonia, Bronchitis, Cold, Cough, Influenza, Pneumonia Typhoides, and Inflammation of the Chest.

Note B.—Under deaths from Marasmus are included deaths reported by Decay, Debility, Tabes Mesenterica and Atrophy.

Note C.—Malformation includes returns as such, and Spina Bifida.

Table III.—*Table of Mortality of Sexes. The months taking precedence according to mortality.*

	July.	August.	Septem.	October.	Decem.	May.	Novem.	April.	January.	March.	Feb'ary.	June.
Men, ...	3989	3850	3589	3237	2998	2992	2966	2911	2873	2860	2806	2552
	August.	July.	Do.	Do.	Do.	Novem.	March.	January.	Feb'ary.	April.	May.	Do.
Women, ...	3101	2885	2719	2571	2333	2291	2236	2224	2191	2179	2093	1831
	Do.	Septem.	July.	Do.	Do.	March.	Feb'ary.	Do.	Novem.	Do.	Do.	Do.
Girls, ...	4428	3256	3225	2427	2223	2185	2178	2161	2143	1980	1953	1872
	Do.	July.	Septem.	Do.	January	Do. and	Decem.	Feb'ary.	Do.	Do.	Do.	Do.
Boys, ...	5132	3935	3785	3013	2718	2713	2713	2607	2573	2385	2331	2171
	August.	July.	Septem.	Do.	Decem.	March.	January.	Novem.	Feb'ary.	April.	May.	Do.
Total of Mortality, .	16,511	14,034	13,349	11,248	10,267	9994	9976	9973	9782	9455	9349	8426

The ages between which deaths occur, are divided into fourteen periods, from one year to 110, by dividing the sum of the ages by the number deceased, (excluding the Still-borns.) It is found that the mean average duration of life was

In 1805,			28.72	years.
Between 1805,	and including	1810,	28.13	,,
Do. 1810,	,,	1815,	30.08	,,
Do. 1815,	,,	1820,	29.14	,,
Do. 1820,	,,	1825,	29.12	,,
Do. 1825,	,,	1830,	26.44	,,
* Do. 1830,	,,	1835,	25.45	,,

The Cholera period in the year	1831, it was	22.1
* ,,	1832,	29.64
,,	1833,	24.39
* ,,	1834,	23.56
,,	1835,	22.65
,,	1836,	22.05

Table IV.—The whole number of Interments for these years amounts to 132,426—of which are classed as Men, 37,585—as Boys, 36,129—Women, 28,676—Girls, 30,036; or, Males, 73,714—Females, 58,712. This amount includes 6,925 Still-born, which, in estimating the mortality under 5 years of age, have been excluded, making an excess of mortality of Males, of 15,002, or 11.32 per cent. The Mortality at certain ages is divided into 10 periods.

	Total	pr. ct.	1805.	1806.	1807.	1808.	1809.	1810.	1811.	1812.	1813.	1814.	1815.	1816.	1817.	1818.	1819.	1820.
Un. 5 years,	49531	39.46	35.48	41.52	37.79	38.7	37.73	32.99	35.08	33.95	38.21	32.14	32.22	31.3	34.49	37.02	38.09	38.87
Bet. 5 & 10 ys.	5023	4.	3.22	3.44	3,48	4.76	4.31	4.05	4,81	4.36	4.75	4.83	3.7	4.03	3.69	3.25	3.42	3.67
10 & 20	5899	4.7	5.65	5.1	4.96	6.1	5.88	6.31	6.99	4.73	5.61	4.99	4.9	5 13	6.06	4.31	5.21	5.29
20 & 30	16628	13.249	15.28	11.49	13.1	12.5	12.46	13.41	12.42	11.97	12.86	14.88	13.76	14.56	12.99	12.33	12.96	12.56
30 & 40	17095	13.462	14.62	13.06	14.26	14.12	13.29	14.23	12.05	14.32	13.91	13.02	16.5	15.27	13.	13.68	12.73	12.29
40 & 50	12512	9.969	10.4	10.25	9.74	9.58	9.42	10.51	10.53	12.19	10.59	11.48	11.06	12.23	11.12	11.54	10.5	10.79
50 & 60	7785	6.23	6.74	5.61	7.48	5.84	6.28	7.52	6.91	7.36	6.25	7.07	6.65	6.67	7.38	7.69	6.64	6.73
60 & 70	5385	4.29	4.44	4.69	4.31	3.84	5.	5.	5.63	5.05	5.38	4.38	4.9	5.54	4.56	4.5	4.52	4 72
70 & 80	3541	2.82	2.65	2.85	3.	3.29	3·23	2.21	3.2	2.96	3.47	4.45	4.15	3.39	3.88	3.54	3.09	3.03
80 & upw.	2102	1.674	1.48	1.83	1.78	1.38	2.	2.84	2.26	2.66	1.81	2.07	2.12	1.84	2.73	2.09	1.92	1.95
Total, . .	125,501																	

	1821.	1822.	1823.	1824.	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.
Un. 5 years,	38.05	35.42	37.26	39.3	32 48	37.59	40.49	39.02	42.05	44.24	44.06	33.41	43.92	45.07	47.51	49.06
Bet. 5 & 10 ys.	3.62	3.33	3.63	4.	2.86	3.85	3.78	3.07	4.52	3.98	4.42	4.51	4.33	4.43	4.2	4.19
10 & 20	4.39	4.95	4.75	4.64	3.79	5.41	3.92	3.98	4.11	4.52	4.25	4.34	4.89	4.32	4.19	4.03
20 & 30	13.21	14.11	14 06	13.66	13.67	13.23	13.94	14.14	12.75	13.	11.68	14.	13.09	13.59	13.27	12.35
30 & 40	13.24	13.91	12.76	13.29	15.87	13.44	13.43	15.07	12.8	12.92	12.26	16.21	12.9	12.82	12.34	12.59
40 & 50	10.27	11.	10.7	10.38	13.41	10.34	10.24	10.24	9.21	8.65	8.64	11.46	8.36	8.36	7.67	7.34
50 & 60	7.21	6.7	7.2	6.3	7.47	7.06	5.82	6 23	5.87	5.55	5.73	7.06	4.81	4.94	4.97	4.11
60 & 70	5.19	5.15	4.19	3.88	4.73	4.32	4.51	4.41	4.3	3.96	3.92	4,9	3.94	3.28	2.68	3.1
70 & 80	2.34	3.23	3.38	2.81	3.37	2.82	2.53	2.37	2.61	2.28	3.45	2.73	2.20	2.07	2.01	1.97
80 & upw.	2.16	2.18	2.01	1.68	2.28	1.9	1.28	1.46	1.62	1.09	1.53	1.36	1.41	1.07	1.13	1.21

The population of this City has risen during this time, from 75,770, to 270,089; viz:

In 1805,	it was	75,770
In 1810,	,,	96,373
In 1815,	,,	100,619
In 1820,	,,	123,706
In 1825,	,,	166,086
In 1830,	,,	197,112
In 1835,	,,	270,089

The rate of Mortality, according to the population, (Still-born excluded,) being

In 1805,	as 1 to	32.98
In 1810,	as 1 to	46.49
In 1815,	as 1 to	41.83
In 1820,	as 1 to	37.19
In 1825,	as 1 to	34.78
In 1830,	as 1 to	37.92
In 1835,	as 1 to	40.87

Great labour and attention have been bestowed upon these Tables, and they may be relied upon for accuracy,

Remarks on the preceding Tables. By Charles A. Lee, M. D., of New York.

Table I.—The above tables have been prepared with great labour and accuracy by our able City Inspector, H. G. Dunnell, M. D. It will be seen that an improvement has been made in the classification of diseases, also in reporting the age, sex, and colour; items, which our reports have never before given. *Table* 1. The deaths in 1837, exceed those of 1836 by 679, the which increase of mortality has been by marasmus, dropsy of the brain, and typhus and scarlet fevers. The proportionate mortality, from some of the principal diseases, for several years past, will appear from the following table:—

DISEASES.	1832	1833	1834	1835	1836	1837
Consumption, - - - - - - - - -	1415	1251	1471	1437	1514	1458
Convulsions, - - - - - - - -	501	510	770	683	778	816
Scarlet Fever, - - - - - - - - -	221	179	408	164	202	579
Measles, - - - - - - - - -	290	38	212	82	443	238
Small-Pox, - - - - - - - - -	89	25	233	351	173	164
Fevers, (excluding scarlet and puerperal,) -	153	132	146	136	202	221
Cholera, - - - - - - - - - - -	3606	0	1021	0	0	0
Bowel Complaints, (diarrhœa, dysent. & chol. inf.)	568	152	696	401	499	548
Inflammations, - - - - - - - - -	806	875	922	1026	1301	1267
Dropsies, - - - - - - - - -	517	461	586	550	452	556
Croup, - - - - - - - - - - -	179	168	198	173	177	151
Hooping Cough, - - - - - - - -	63	105	141	172	152	63
Still-born, - - - - - - - - -	384	392	492	474	506	550
Marasmus, - - - - - - - - -	201	146	180	111	95	292
Acute Affections of Lungs, - - - - -	433	406	535	635	749	780
Do. do. Stomach and Bowels, -	226	232	233	197	276	220
Typhus Fever, - - - - - - - - -	84	55	106	46	117	338
Inflammation of Liver, - - - - - -	44	36	50	44	82	51

From this table it appears, that the mortality from typhus and scarlet fevers has much increased during the last year; while that from croup, hooping cough, and measles has diminished. The small pox is not only less prevalent, but assumes a less malignant form than it did three years ago. The mortality from typhus fever, has risen from 46 in 1835, to 338 in 1837; and is continually on the rise. This increase is probably owing to the greater privations among the poor, arising from want of employment, and also, in part, to the circumstances of large numbers of foreigners having sickened with typhus after landing; having received the contagion on board of the crowded vessels in which they make the passage. Each one of these, in his turn, becomes a focus of infection to others.

With respect to the influence of season upon different diseases, it appears that inflammation of the brain is not materially affected by it, August and September furnishing the largest number of deaths. The same seems to be the case in relation to *dropsy of the brain. Apoplexy* proves most fatal during the cold months, contrary to what we should expect; while the mortality among young children from *convulsions,* is threefold greater during the hottest months July and August. *Croup* proves most fatal during the months of November, December, and January, May, July, and August, being the most exempt; the winter months also furnish a large proportion of the cases of *inflammation of the lungs*—March furnishing, however, the largest. The same holds true as to *consumption,* with the exception that the fall months, of October, November and December, are the lowest in the scale of mortality from this disease. The following is the order in which the months rank, commencing with the lowest: October, 72; November, 88; December, 97; July, 101; August, 109; September

119; June, 123; May, 133; January, 142; February, 152; March, 159; April, 163. The *bilious remittent fever* proves the most fatal in September and October; while May, June and July have furnished much the largest number of deaths by typhus. *Scarlet fever* appears to be much influenced by season—January, February and March proving far the most fatal. The following is the order of the months: July, 12; June, 20; August, 22; October, 23; September, 25; November, 27; December, 46; May, 48; April, 48; March, 88; February, 110; January, 110. *Measles*, on the contrary, proves most fatal during the summer months, particularly July, which furnished 63 deaths; while October, November, December, January, February and March, furnish but 59 in all. The largest number of deaths from *small-pox* occurred in the month of January, 30; the least in July, 5. Deaths from affections of the digestive organs are almost entirely confined to the hot months, August and September furnishing a large proportion of the whole. August, September and October furnish the largest number of deaths from marasmus. *Teething* also, from its influence on the digestive organs, proves most fatal in the summer months, particularly August. Season appears to have little, if any, influence on puerperal diseases, or on affections of the urinary and genital system generally. March seems to be by far the most fatal month to the aged, and December the least. The number of still-born averages nearly the same in every season.

With respect to diseases affecting our coloured population, it appears they are particularly exposed to consumption, fevers, (especially typhus,) small-pox, dropsy, inflammation of the larynx, liver, venereal, intemperance, and delirium tremens. The diseases from which they are more exempt than the whites are, inflammation and dropsy of the brain, convulsions, croup, hooping cough, scarlet fever, and measles, (though these are doubtless often mistaken, owing to the difficulty of diagnosis,) suicide, and old age. Though the black population bears to the white the ratio of 1 to 16, yet their deaths constitute one-tenth of the whole number, being nearly one-third greater than that of the whites in proportion to their number.

In relation to the liability of the sexes to different diseases, it appears that males are particularly exposed to affections of the brain; to apoplexy, hæmoptysis, and inflammation of the lungs, dropsy of the chest, organic disease of the heart, measles and small-pox, marasmus, delirium tremens and casualties; while females are more subject to hooping cough, consumption, rheumatism, cancer, venereal, burns, and old age.

From an examination of the ages at which the deaths occurred, we obtain the following results:—The greatest mortality from inflammation and dropsy of the brain occurs under the age of one year; from apoplexy and palsy, between 30 and 40; from convulsions, under one year; from croup, ditto; from hooping cough, between 2 and 5; from inflammation of the lungs, under one year; from consumption, between 20 and 30; from fevers, between 30 and 40; from scarlet fever, between 2 and 5; from measles and small-pox, the same; from erysipelas, under one year; from dropsy, between 40 and 50; from inflammation of stomach and bowels, under one year; from cholera infantum, the same; from bowel complaints, generally the same; from marasmus, between 1 and 2; from inflammation of liver, between 20 and 30; delirium tremens, between 30 and 40; and from scrofula, the greatest mortality occurs between 2 and 5 years of age.

Of the 1458 deaths by consumption, it will be observed that 592 were natives of Great Britain and Europe; and as the whole number of natives of Great Britain and Europe is 1869, it follows that one out of 3.25 died of this disease, and of the whole remainder, one in 7.66. But if we deduct the deaths of coloured persons of the same disease, which were one in 4.25, it leaves the deaths by consumption of the white natives of this country as only one in 9.47—a disparity not generally known.

The same disparity holds also in relation to typhus fever. Of the deaths by this disease, 151 out of 338 were foreigners, or more than one-third of the whole number.

Of the 8732, being the total number of interments, more than one-fourth were paupers, or buried at the public expense.

Table II.—This table contains a mass of valuable facts, being a correct statement from the original records, of all the deaths that have occurred in the city of New York, during the last 32 years, or since any record has been kept. From this we are able to learn, with considerable precision, what diseases have increased and what diminished in mortality.

In the first place, diseases of the brain seem to have increased nearly fourfold in proportion to the population. Apoplexy nearly one-third in the same ratio. Deaths by convulsions, chiefly under one year, have increased nearly three fold; and those from croup, hooping-cough, and inflammation of the lungs, have nearly doubled; while deaths from consumption have increased a little over one-third in proportion to population.

Fevers, excluding scarlet and puerperal, have increased only nine per cent.; while scarlet fever has risen from 4 in 1804, to 579 in 1836. The mortality from small-pox is rather less in proportion to the population than in 1801; but measles, which at that time was a rare disease, has now become frequent and fatal, having carried off nearly 500 children in 1835. While inflammation of the stomach and bowels has somewhat increased, cholera infantum is less fatal, by one-third, than it was 30 years ago. The same is also true in relation to dysentery and marasmus. As there can be no doubt, that, owing to the great extension of the city and the consequent deterioration of air and water, these diseases are more prevalent than they were at that period, it may be reasonably inferred that their diminished mortality is owing to their being treated with greater skill and success than formerly.

Diseases of the genital system have not kept pace with the increase of population, although we now number more than four times the inhabitants we did in 1805, yet the deaths from stone in the bladder, are not more numerous than they were at that time, indicating, as we think, more successful methods of cure, for none can deny that the same causes still remain in operation.

Diseases of the heart appear to have increased very much within the last few years. From 1804 to 1834, but nine cases of death from diseases of the heart were reported; since which period they have averaged over 20 annually. Whether this is owing to those causes of mental excitement, which have agitated in a remarkable degree all classes of society for the last few years, it may not be possible to determine with certainty; yet no one can doubt that they have exerted considerable influence.

Puerperal fever has kept an even pace with the population, and deaths in child-bed have diminished, owing, doubtless, to a better acquaintance with the obstetric art. The whole number of deaths from puerperal fever, and in child-bed, for 32 years, is 1,038, this bearing to the whole number of deaths the ratio of 1 to 115. When we consider the immense number of births, which have occurred in this city during the same period, ranging from 2 to 300,000, we shall find that the chances of a fatal result in parturition are small, indeed. This result, however, is strikingly at variance with the statement in the Transactions of the Statistical Society of London, viz.: That of 448,356 females, who died in the Prussian States in the course of fifteen years, between the ages of 14 and 45, 70,215, or nearly one-sixth, died either immediately in the act of delivery, or in child-bed; and of the infants born, one in 108 cost the mother her life.

The diseases included under the general head of inflammations, do not appear to have increased. The deaths from rheumatism have been but 195, during the whole period; and from gout, 66. Cancer, scrofula and syphilis, have been of

nearly equal fatality, averaging 350 each. The mortality from the venereal disease has, indeed, diminished more than 50 per cent. Whether this indicates a better state of the public morals, or an improved *methodus medendi*, we leave for others to judge. The deaths from *old age*, amount to 3,532, being in the ratio of 1 to 34 from deaths from all diseases. While the mortality from drinking cold water has diminished four-fold, that from drinking ardent spirits has increased in the same proportion. The deaths from *suicide*, in 1805, were 26 in number; in 1836, but 33 instead of 100, as they should have been, to have kept pace with the population. But, perhaps, the most important fact contained in this table, is the vast increase in the number of the still-born and premature, rising from 47 in 1805, to 506 in 1836, being nearly five-fold in proportion to population. Various causes have been assigned for this increase, none perhaps more plausible than those given by the late talented physician, Dr. Avery, and published in a late number of this Journal. But in addition to these, which it will be recollected, operate chiefly in lowering the standard of female health, thus causing the premature expulsion of the fœtus,—there are others, of no slight efficiency, such as the general use of ergot, particularly in difficult and protracted cases of labour. We have witnessed many cases, where the death of the fœtus has been caused by the use of this article, and where life might, in all probability, have been saved by an early and judicious use of the forceps. A curious fact connected with this subject is, that the number of male still-born, is nearly double that of the female in 1837, the former being 349, and the latter 193.

Table III.—Table three, shows the mortality of the different sexes in different months of the year,—commencing with the highest; the months taking precedence according to mortality. These rank in the following order:—

August, - - - -	16,511
July, - - - - -	14,034
September, - - - -	13,349
October, - - - -	11,248
December, - - - -	10,267
March, - - - -	9,994
January, - - - -	9,976
November, - - - -	9,973
February, - - - -	9,782
April, - - - -	9,455
May, - - - -	9,349
June, - - - -	8,426

The mean duration of human life has ranged from 22.05 in 1836, to 30.08 in 1815. It is a remarkable circumstance, that during the year 1832, when there were 3,513 deaths from malignant cholera, and the whole number of deaths near 10,000, the average duration of life was greater than during any year but one, in the last 30 years: it being 29.64 years. This singular fact was occasioned by the diminished mortality among children, and the vastly increased mortality among adults. The mean duration of life for the whole period, is 25.48 years. The rate of mortality according to population is as one in 38.76, in the lowest, one in 32.98.

Account of Signor Giromalo Segato's *Discovery of a Method of indurating Animal Bodies.* By Alexander M. Bruen M. D., of Perth Amboy, N. J. [Communicated in a letter to the Editor.]

During a recent visit to Italy, I had the good fortune to become acquainted with, and personally to inspect, the very singular, and as it appears to me, important experiments of Dr. Jerome Segato, formerly of Florence. You are probably aware that this gentleman had discovered a mode by which he could render all animal substances of the consistence of stone, and at the same time partaking of its durability.

As Segato died without imparting the secret to any one, by which he effected these changes, it has occurred to me, that a publication of his success, and an account of his preparations might be of use to science, as thereby others might be induced to pursue the investigation. There are now some attempting it in Florence, and partial success has attended the efforts of one gentleman.

It appears from the memoirs of Dr. Segato, published by his friend Joseph Pellegrini, that he was led to his important experiments while travelling in Egypt. In following the path across the desert which a very violent tornado had but recently marked in the sand, Segato discovered parts, and at length an entire human body completely carbonized, (*carbonnizzazione,*) which had probably for many ages been buried in the sands. The thought occurred to him, that if he could succeed in carbonizing animal substances, he might prevent their change or decay; and with this end in view, he commenced his experiments. Nothing is known of the mode he pursued and by which he arrived at ultimate success, save that the substance to be acted upon, underwent immersion in some peculiar liquid.

This is the course those have adopted who are now pursuing the investigation at Florence, and I have seen one piece of liver nearly as hard as stone, which had been operated upon by a gentleman of that city.

In the memoirs of Dr. Segato above referred to, are a number of certificates attesting his success, and the value of his discovery, given by men of character for learning, but a narration of what I have myself seen may possibly be more interesting.

There are in Segato's cabinet a great number and variety of objects that have been subjected to his treatment, and I will select from them a few which struck me most forcibly. The first was a Canary bird. This specimen is the least perfect, though not the least interesting in the collection. It was one of the first successful essays of Segato. The quality of indestructability has been attained, but there is less of life in its appearance than in the succeeding preparations. This specimen has undergone a more thorough trial than any other, for during the first year it was immersed in waters for more than thirty days, and in the second for more than forty, continuously. After this, it was for a much longer period kept in a box and covered with moths. It received no injury from any of these tests, except the loss of the lively appearance of the feathers, which of course detracts greatly from its beauty. Another preparation is a parrot. This bird retains much of its beauty of plumage and natural appearance. The developements of the frog increasing in progression from the egg even to the perfect animal, is here exhibited. Also the eggs of the land turtle. In one of them, half open, is perceived the embryo; in another the little animal formed. Thus is presented, in any stage of increment, the egg, the embryo, the turtle—in their native form and with their natural colour. A viper killed in the act of changing his skin, a partial envelopement of which still surrounds him, is here seen, apparently in life. There are also various kinds of fish, which are exceedingly well preserved.

But the most interesting of Segato's specimens, are those which were parts of the human body. The most extraordinary is a human hand. This preparation retains much of the flexibility which it had in life, for while it is almost of the hardness of stone, (though apparently natural,) yet the fingers may be bent with ease, the ligaments of the joints being still soft. The feet retain their natural appearance the same as the hand, but of course are not so interesting, as the toes are moved but imperfectly. Both the hand and foot appear to have belonged to a consumptive patient; but whether such was the fact I could not learn, perhaps the appearance was owing to the manner of its preparation, though I should imagine not. Another preparation is an entire child, appearing as if having been but recently in life, well preserved. Another is the liver of one who has died from the effects of ardent spirit. The entire brain, exhibit-

ing its various convolutions, at the same time, of the hardness of marble. Also the breast of a woman. That this last preparation has undergone any change, cannot be told by the eye alone, touch is necessary to ascertain its truth.

I have mentioned a few of the more interesting objects in Segato's collection. Their number and variety are too extensive for a detailed account.

There is also shown a table composed of 214 pieces, which at first appears like "*pietra dura*," comprising various parts of the human body, such as liver, muscle, heart, brain, kidney, artery, placenta, &c. These have all the external characters of stone, and resemble various kinds of jasper, agate, and breccia.

These specimens of Mr. Segato appeared to me particularly interesting, for by the same process morbid appearances could be preserved in a state in which much more knowledge could be acquired than in the present imperfect preservation, by means of spirit.

From the few morbid specimens in Segato's collection, the value of the discovery, and the misfortune of its loss, is at the same time demonstrated. But to natural history would appertain the greatest benefit from its re-discovery. By this process every species of animal could be preserved in their truth and nature, the most delicate appendages of even insects not being injured. The hope that these few remarks may induce a further investigation, and that the re-discovery may take place in our own country, has induced me to make this communication.

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Case of Prolapsus Ani. By Samuel Jackson, M. D.—The following is a brief history of the case of prolapsus ani, which some time ago you requested for the use of the Journal.

Some years since I was requested to visit Philip Haupt, of Irish Valley, twelve miles south of Northumberland. On arriving at the house, I was surprised to find that he had gone about half a mile to visit a sick neighbour. Thither I pursued him, and found him labouring under a prolapsus ani with the whole circumference of the intestine in a state of mortification.

He informed me that he had been subject to this malady for some years, that a few days before he had been unable to return it as usual; that he had suffered great pain, and that he was suffering much when he had sent for me; that when the pain had gradually subsided under the use of some poultice, he had felt himself so well as to be able to visit his sick neighbour.

A poultice of bread and milk, with a strong decoction of the bark of *quercus alba*, a remedy which was most convenient, was directed, and the patient was well in a few days. The whole protruded part sloughed off and left no vestige of itself.

The prolapsus had not once returned when I last saw him, at least ten years after the cure was effected; nor had he during that long time been the least incommoded by any disease or disorganization in the region of the rectum.

I forbear the making of any observations on this case, since the relation in which it stands to the operations which have been performed for the cure of this grievous malady, are sufficiently evident. We would refer, however, to the cases of abscission, by J. W. Heustis, M. D., recorded in the tenth and twenty-second numbers of this Journal; not because we consider either his or nature's method as preferable to Dupuytren's, or even Hey's, but merely that the reader may consider the cases in relation to each other. Here are four methods by which this loathsome and debilitating affliction may be radically cured: where is the patient who would not gladly submit to either of them?

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Account of an Anencephalus, or Human Monstrosity, without a brain and spinal marrow. By Alexander Y. Nicoll, M. D., and Richard D. Arnold, M. D., of Savannah. Read before the Medical Society of Georgia, on the 6th May, 1837.—On the 12th February, 1837, we were requested to examine a female negro child,

which had the night previous been prematurely born at the eighth month, to give our opinions whether violence had been used or not, which in consequence of the singular appearance it presented, was supposed by those who attended at the delivery. Upon a superficial examination, we pronounced that no violence had been used to destroy the child, but that it was a monster of an interesting character, and requested that it might be given to us for a more minute examination, which was readily granted. We have, with the assistance of Dr. Lewis F. Nicoll, of New York, made as careful an examination of this case, as our means and experience would allow us, and believe it is important in determining the question of the evolution of the brain and nervous system;—not so much, however, from the deductions which we ourselves have drawn from the dissection, as from its affording additional facts to those which have already been presented to the profession on this subject, by older and abler heads than ours.

A front view of the child exhibited to us the eyelids as two round bodies placed upon the top of the head, which, previous to the dissection, we considered as deformities in themselves. In this view, the chin was resting upon the chest, bringing the head so low down, that the ears not only touched, but were actually turned up by the shoulders. Upon looking at the head laterally, [see accompanying figure] it appeared as if cut off by a plane which intersected it just above the nose; thence passing down to the top of the ears, and there exhibiting a slight prominence, occasioned by the sponginess of the membrane, hereafter to be mentioned, the plane then passing down at a greater angle to the shoulder.

Looking at the head posteriorly, it appeared as if the whole scalp had been removed, with the exception of a small portion just back of the eyes, which passed down on each side close to the ears, and terminated directly upon the shoulders, upon the whole of which hair had been formed. The central portion, instead of the convexity usually observed, presented a very irregular appearance, dark and bloody, as if violence had been used. This central portion was covered by a thin membrane, which we believed to be the dura mater. Upon pressing this with the finger, it appeared to be in direct contact with the bones beneath, with the exception of a small part in the centre, which felt spongy to the touch, but at the same time of very little thickness.

Proceeding to the dissection, and removing the scalp behind the eyes, we were surprised to find not the least rudiment of the frontal bone, except a portion of the orbitar plates, which was attached to a confused mass of bone, hereafter to be mentioned. Upon dissecting the membrane from the central portion, we found it closely adherent to the basis of the cranium, if we may call it so, (with the exception of the spongy central portion that appeared to contain blood,) and traced it down to the spinal canal from which it appeared to emanate. Underneath this membrane was a confused mass of bone, very solid, without any marks of the usual divisions of the bones of the cranium. Continuing on, we found no trace of the parietal, the occipital, or the squamous portion of the temporal bone. After an attentive examination, we could not discover the least portion of the cerebrum or cerebellum. That portion of the *foramen magnum*, which is formed by the sphenoid bone, and which is usually, more or less, round, was in this case angular, the angle being formed by the junction of the bases of two triangular plane faces, the vertrices of which terminated behind the ears, and there formed something like the mastoid process; which, however, instead of being round, presented a sharp edge looking outwards and backwards. Believing that something might be contained in the confused mass of bone which formed what might be considered the base of the skull, we sawed through it, but found it perfectly solid. In examining the cervical portion of the vertebral column, we could not discover the

atlas; and found that it was composed of four, instead of seven, vertebræ. On opening the spinal column, there was no trace of the spinal marrow; but the membranes were present from about the 2nd dorsal vertebra. From the position and great prominence of the eyes, we doubt if there could be any antrum maxillare; which, upon dissection, we found to be the case. The eye had made itself a socket in that portion of the upper maxilla, commonly occupied by the antrum. In our dissection, we were particularly struck with the quantity of adipose matter we met with, as also the abundance of hair, which, in this particular case, covered the cheeks, the shoulders, the outside of the arms and fore-arms, the back down to the nates, and the outside of the thighs and legs.

We next dissected down, to ascertain the appearance of the axillary and popliteal nerves, and found them large and well developed. We also dissected the neck to ascertain the comparative size of the internal and external carotid; but regret that we were unable to determine this, in consequence of our wanting the means of injecting them; and the common carotid was so small, and not being injected, we lost all trace of the artery in a mass of caseous matter, behind the angle of the lower maxilla. With the exception of the head and neck, every other part of the child, externally, was remarkably well formed and plump.

From the foregoing description, it will be at once perceived, that the monstrosity described answers exactly to that known as an Anencephalus; as that term has been reserved to designate such as have the brain partially or completely absent, "with a corresponding defect of the parts by which it is protected." In this case the external organs of the senses were present.

Our object in bringing this subject before the Society, is not merely that a "*lusus naturæ*" might be brought to the cognizance of our medical brethren, and not be buried in obscurity. But, in contemplating it, it cannot fail to strike every observer as being pregnant with interest, in a philosophical point of view. In the few observations which follow, it is more our object to elicit research than to provoke criticism. In the article Anencephalus, in that excellent work "the Cyclopedia of Practical Medicine and Surgery," Dr. Geddings, of Baltimore, has the following observations:—

"In that variety of anencephalous monsters in which the defect is most considerable, there is a total absence of both brain and spinal marrow: the peripheral portion of the nervous system exists and is well formed; but the nervous centre, or cerebro-spinal axis, is altogether defective. *This is by far the rarest form of this species of abnormal deviation*, and is the *only one* to which the term *anencephalus* can be properly applied. So *seldom indeed* does it occur, that *only a few cases are to be found on record*."

In this, as in the case reported by Morgagni, and cited in that article, the *cerebrum*, *cerebellum*, and *medulla spinalis* were absent; and like that reported by Vanhorne, "the deformed bones of the cranium were so thick and closely grouped together, that no cavity existed; but the membranes of the *medulla spinalis* were developed.

The membrane lying over the bones of the cranium was undoubtedly dura mater; because, after lifting it up, the periosteum was found adhering to the bones; and moreover the membrane was continuous from the cavity of the spine. In relation to the peripheral nerves, there are some facts worthy of attentive consideration. *All* the nerves of the periphery were not present. To obviate misapprehension, we beg leave to state, that in nerves of the periphery, we include those which establish a communication between the brain and spinal marrow and the organs of the external senses.

1st. *Of the Nerves to the orbit of the Eye.*—In the normal state, no single organ is so well provided with nerves as this. Anatomists reckon no less than six, viz: the optic; the 4th pair, or pathetic, (the respiratory of Bell;) a branch of the 5th, or trigeminus; the 3d, or general motor of the eye; the 6th, or external motor; and a branch of the sympathetic, which joins it on entering the orbit. It will be recollected, that the ball of the eye rested on the upper maxilla, and had formed a fossa for itself in that part usually occupied by the antrum maxillare. A careful and minute examination failed to reveal to us a single nervous filament about the ball of the eye, or in its vicinity. The foramen by which the optic nerve passes through the sclerotic, did not exist; and although every other part of the eye was

satisfactorily apparent, the *retina* (if it had existence) could not be perceived by us. The six muscles of the eye-ball were also deficient.

2nd. *The Nerves to the Nares.*—In the normal state, the nares are supplied from two sources, the olfactory and the trigeminus. There was no trace of a single filament of either.

3d. *Of the Ear.*—There was no cavity in the mass of bone which might be said to represent the petrous portion of the temporal bone. Of course all the auditory apparatus usually contained in it, must have been wanting. The external ear was present, and a small depression represented the *meatus auditorius externus.* As might be inferred from there being no cavity in which to pursue its usual course through the petrous bone, the facial nerve was entirely wanting. Indeed, the space behind the angle of the inferior maxillary bone, was filled with a kind of caseous matter, in which no muscular fibres nor nervous filaments could be found—not the least interesting thing in this dissection, was the anatomy of the nerves going to the tongue and down the front of the neck. As all the nerves of the encephalon which we had looked for, and which should have come through foramina in the cranium, had proved deficient, it was with no little curiosity that we commenced a careful examination of that part. The pneumo-gastric, the hypoglossal, and the glosso-pharyngeal, equally with the portio-dura, trigeminus, patheticus, and motor-oculi, are, in the normal state, involved in foramina in the cranium; and analogy would have led us to infer their absence. But, although from the shortness and imperfection of the neck, and the small developement of the muscles in its front, a little more than ordinary care was required in the dissection, the pneumo-gastric, the hypo-glossal, with its descending ramus, and the glosso-pharyngeal, were distinctly visible. The preparation now before the Society will make it apparent to every one. But they were lost above in the caseous matter which we mentioned as existing behind the angle of the inferior maxilla. The common carotid and the internal jugular were also apparent, though small, and they were insensibly lost in the same matter.

As all the other parts of the body, save the head, were well formed, it remained to be seen what was the condition of the nerves distributed in them. It was not deemed necessary to examine more than one for each extremity. For the arm, the median nerve was cut down to and exposed. It was of a full and natural size. The popliteal nerve was exposed in the same manner and with a similar result.

What the nature of the energy of the nerves is, will probably always remain a matter of speculation. We can appreciate the powers of life only by their effects. But let not uncertainty be hence attributed to our profession, above others. Who has ever approximated to the real nature of that wonderful law by which the planets are made to revolve in their respective orbits, and the harmony of worlds preserved? Yet, from a careful examination of its effects, laws have been deduced and made the basis of unerring calculations—so the diligent observer of nature at the bedside and in the dissecting room, cannot fail to arrive at a knowledge of the laws of life that will be of inestimable value to him in the investigation of disease, which is a departure from their natural course.

In this case, there could be no dispute as to the priority of developement, between the brain and spinal marrow. Is it not then improper to speak of one taking its origin from the other; and is not this case a confirmation of Haller's opinion that there is an evolution of the parts of the fœtus without the *addition* of any new part?

With the exception of the head, all the parts were well nourished. Certainly they did not depend on nervous energy derived from the cerebro-spinal axis, for their nutrition. We must then look to the arteries as the source of nutrition, and as the cause of the developement of such nerves as did exist. It is evident that the arteries which exist in the normal state, could not exist in the confused mass of bone constituting the cranium in this instance; hence a deficiency in evolution of the nervous, muscular and bony matter of that part.

The nerves that were developed must have had an energy independent of the brain and spinal marrow.

The result of the researches of Tiedemann on the developement of the brain in the fœtus, is that the spinal marrow is the part of the nervous system first formed, and most distinct in its early months. The case before us, proves that the defi-

ciency of the spinal marrow did not prevent the formation of most of the peripheral portion of that system; and that such formation is not dependent in any way upon that of the spinal marrow.

A few observations on monsters will close what we have to say on the subject. Like the majority of monsters on record, this was of the female sex. The observations of Meckel have proved the "genital organs of the two sexes are formed primitively in the same model, and that they should be considered only as a modification of the same fundamental type;" and that the embryo is, *in all cases, primarily of the female sex.* The imperfect formation thus occurring more frequently in females, has been supposed by Georget to be owing to a feebler energy of the formative or organic powers in the female than in the male! Why a deficiency should exist in one part in preference to another, must remain a matter of speculation.

The history of the mother affords no clue in this case. She is a woman about 30 years of age, well formed, and has been the mother of eight children, all of whom, with the exception of two, have been delivered at the regular time; and her deliveries have generally been easy, and her recovery rapid. There had been nothing peculiar during this pregnancy. In the delivery, there was nothing to lead to a suspicion of any thing unusual, and it was not until the child was fairly exposed to the light, that it was discovered to be a monster. There was said to be a larger quantity than usual of the liquor amnii; but this we are inclined to attribute to the birth being premature. The child showed no sign of life after birth. It had moved, sensibly, when in utero.

Medical College of the State of South Carolina.—The number of medical students in this school during the past session, (1837–38,) was one hundred and forty-one.

The medical faculty consist of, J. Edwards Holbrook, M. D., Professor of Anatomy; John Wagner, M. D., Professor of Surgery; S. Henry Dickson, M. D., Professor of the Institutes and Practice; James Moultrie, M. D., Professor of Physiology; Thomas G. Prioleau, M. D., Professor of Obstetrics; C. U. Shepherd, M. D., Professor of Chemistry; Henry R. Frost, M. D., Professor of Materia Medica; E. Geddings, M. D., Professor of Pathological Anatomy and Medical Jurisprudence; F. Wurdeman, M. D., Demonstrator.

Louisville Medical Institute.—The number of medical students in this school during the past (the first) session, was eighty.

The medical faculty consist of, Jedediah Cobb, M. D., Professor of Anatomy; Charles Caldwell, M. D., Professor of the Institutes of Medicine, and Clinical Medicine, and Medical Jurisprudence; John Estin Cooke, M. D., Professor of the Theory and Practice of Medicine; Joshua Flint, M. D., Professor of Surgery; Henry Miller, M. D., Professor of Obstetrics and the Diseases of Women and Children; Lunsford Potts Yandell, M. D., Professor of Materia Medica, Lecturer on Chemistry, and Dean of the Medical Faculty; William H. Donne, M. D., Demonstrator of Anatomy; Stephen Cooke, M. D., Librarian.

The summer session commences on the second Monday in May, and continues until the last of September, with a recess during the month of August. Tickets to the entire course $70.

At the public commencement on the 2nd of March, 1838, the degree of Doctor of Medicine was conferred on twenty-four students.

Medical College of South Carolina.—The number of students in this institution the past session, (1837–8) was twenty-nine.

Necrology.—We have the painful office to perform of announcing the death of our collaborator, Dr. Ansel W. Ives. Dr. Ives was born in Woodbury, Connecticut, on the 31st of August, 1787. His father was a respectable farmer of that place, who, having a large family, and very limited means, was unable to give his children even an ordinary education; and the third child at the early age of nine years, was bound apprentice to a farmer until his nineteenth year; his time was spent in agricultural employment, except a few months in

which he was permitted to pass a portion of each day at an ordinary school. A taste for knowledge and literary pursuits, which may almost be considered innate in some measure, compensated his want of early advantages. From an early age he always carried a book in his pocket, and never lost an opportunity of study afforded by intervals of labour. So industrious a reader was he that before the expiration of his apprenticeship, (as he informed the writer,) he had perused all the books he could borrow within five miles of his master's residence. At the age of nineteen, having qualified himself to keep an elementary school, he commenced teaching, which he pursued for several years with credit to himself and advantage to his employers. Continuing at the same time, with the greatest zeal, his plan of self-instruction, he soon found himself sufficiently advanced to commence the study of a profession; and having chosen that of medicine, he entered himself a student with Dr. North, an eminent physician of New London. On removing to Fishkill, in the State of New York, he continued his studies with Dr. Barto White, a distinguished physician of that place, and completed them in the office of Dr. Valentine Mott, graduating in the College of Physicians and Surgeons of the University of New York, in the year 1815. Dr. Ives carried into the practice of his profession the same zeal and industry which had heretofore so distinctly marked his character, and though for several years his means were limited and precarious, he soon acquired a large share of public confidence and professional employment, which continued steadily to increase till his exertions were paralysed by the disease which terminated his life. Dr. Ives devoted a large share of his time to the instruction of others; and many of his pupils are witnesses of the zeal and fidelity with which he discharged that responsible duty. He also contributed largely to our medical journals; and some of his papers, especially that on Humulus Lupulus, gained him much credit, both at home and abroad. He republished, with notes and additions, Paris's Pharmacologia, and Hamilton's Observations on the use and abuse of mercurial medicines, and also a description of the Epidemic Influenza, which prevailed in the northern and eastern states in the year 1815; indeed, his whole time was spent in improving his own mind, or making himself useful to his fellow men. In 1827 he became a member of the Presbyterian church, and from that period devoted a large portion of his time to religious and charitable institutions; being always ready to work, a great deal of labour in preparing reports, &c. fell to his share, and was always cheerfully performed. Of the sincerity of his religious faith, his consistent life, his exemplary patience under almost intolerable pain, and truly christian death, afforded the best evidence.

Dr. Ives was in person above middle height; well formed, with an intelligent eye and intellectual countenance; his manners were prepossessing, and he possessed a fund of humour and anecdote, which made his company acceptable to his associates, and often dissipated the gloom of the sick room; his constitution was good, and he enjoyed a fine share of health until he was attacked in February, 1837, with neuralgic pain about the left hip, which gradually increased in duration and violence until his sufferings, for hours together, were almost beyond endurance. About five months from the attack the hip and thigh began to enlarge, which they continued steadily to do with augmented pain till February 2nd, 1838, when death relieved him from his agony. On dissection a large tumour was found on the left ileum, extending downwards under the left gluteus muscle, pressing on the sacro-sciatic nerve and bones of the pelvis, which were careous, and on that side separated from each other, and a collection of matter on the inner surface of the ileum, with traces of extensive and severe peritoneal inflammation, which was probably the immediate cause of his death. F. U. J.

QUARTERLY MEDICAL ADVERTISER.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

The Lectures commence annually on the first Monday of November, and continue until the ensuing March.

Theory and Practice of Medicine,	By Nathaniel Chapman, M. D.
Institutes of Medicine,	By Samuel Jackson, M. D.
Special and General Anatomy,	By William E. Horner, M. D.
Materia Medica and Pharmacy,	By George B. Wood, M. D.
Chemistry,	By Robert Hare, M. D.
Surgery,	By William Gibson, M. D.
Obstetrics and Diseases of Women and Children,	By Hugh L. Hodge, M.D.

Clinical Medicine and Surgery taught by the Prescribing Medical Officers at the Blockley Hospital, under the Guardians of the Poor, and at the Pennsylvania Hospital.

W. E. HORNER, M. D.
Dean of the Medical Faculty.

University of Pennsylvania.—At a Public Commencement, held Friday, April 6th, 1838, at the Musical Fund Hall, Locust Street, the Degree of Doctor of Medicine was conferred upon the following Gentlemen, by the Rev. Provost, John Ludlow, D. D.; after which an Address was delivered by W. E. Horner, M. D., Professor of Anatomy.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Agnew, David H.	Pennsylvania,	Medical science and responsibility of medical character.
Allison, Robert P.	Tennessee,	Acute Hepatitis.
Armistead, Thos. D.	Virginia,	Icterus.
Barnes, Joseph K.	Pennsylvania,	Angina Pectoris.
Bethell, John P.	Pennsylvania,	Uterus.
Boatwright, John H.	South Carolina.	Signs of disease derived from cough and expectoration.
Bockee, Jacob	New York,	Colica Pictonum.
Bond, Stephen	Nova Scotia,	Pneumonia.
Braxton, William P.	Virginia,	Intermittent Fever.
Brent, Daniel	Dist. of Columbia,	Hysteria.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Buck, John R.	Tennessee,	Auscultation and Percussion.
Bullitt, Henry M.	Kentucky,	Morbid anatomy of Mucous coat of Stomach and Bowels.
Bulloch, William G.	Georgia,	Pneumonia.
Calhoun, Aquila T.	Georgia,	Remittent Fever.
Carter, Francis B.	Alabama,	Some of the physical peculiarities and diseases of southern negroes.
Champlin, Stephen	Connecticut,	Principles of diet.
Chew, William L.	Mississippi,	Cholera.
Christian, Saml. B.	Virginia,	Intermittent Fever.
Clement, Robert A.	Virginia,	Erysipelas.
Cocke, Carey C.	Virginia,	Erysipelas.
Cocke, Thomas R.	Kentucky,	Hypertrophy of the Heart.
Connel, Alva	Georgia,	Acute Gout.
Cooke, A. T. M.	Virginia,	Urinary Calculi.
Corson, David R.	Pennsylvania,	Errors relative to the preservation of health.
Cross, William C.	North Carolina,	Ascites.
Cummins, William	Delaware,	Colitis.
Dale, James W.	Philadelphia,	Is medical science favourable to scepticism?
Davis, Stephen	Alabama,	Atmospheric Air.
De Young, Philip	Pennsylvania,	Poisonous and remedial effects of Stramonium.
Dewees, Oscar L.	Philadelphia,	Peritonitis.
Diddep, James L.	Virginia,	Scarlatina.
Dimon, David	Connecticut,	Indigestion.
Dimon, Theodore	Connecticut,	Conium Maculatum.
Dodson, William E.	Virginia,	Asphyxia.
Dollarhide, Benj. E.	Alabama,	Pseudo-Arthrosis.
Early, John F.	Virginia,	Menstruation.
Egé, Charles N.	Pennsylvania,	Acute Dysentery.
Faulkner, Horace D.	Virginia,	Irritable Testis.
Fauntleroy, Saml. G.	Virginia,	Human Teeth.
Franklin, Bedney L.	Georgia,	Medical vagaries.
Foreman, Isaac	South Carolina,	Cholera Morbus.
Furniss, John P.	Louisiana,	Grippe.
Gardner, Daniel P.	Virginia,	Crystallization.
Glass, William H.	North Carolina,	Fever.
Graham, Richard J.	Virginia,	Digestion.
Granier, Elias D.	Virginia,	Temperaments.
Green, Sherwood	Tennessee,	Intermittent Fever.
Green, William A.	New York,	Purpura.
Griscom, John D.	Pennsylvania,	Dysentery.
Guion, John A.	North Carolina,	Colica Biliosa.
Halson, George J.	Virginia,	Diagnosis of Typhus and Typhoid Fever.
Hamilton, David B.	Georgia,	Pneumonia.
Hamilton, W. J. A.	Georgia,	Intermittent Fever.
Hanson, John A.	Georgia,	Therapeutical application of water.
Harding, Wm. H.	Virginia,	Lingering Labour.
Harpur, John	Rhode Island,	On the reciprocal influence of the mind and body.
Henckel, Silon A.	Virginia,	Pleurisy.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Hendree, George R.	Virginia,	Hydrocele.
Herring, William	Virginia,	Carbon.
Hicks, William R.	North Carolina,	Opium.
Hopkinson, Jos., Jr.	Philadelphia,	Developement and Sympathies of the Liver.
Horne, Charles N.	Georgia,	Infantile Remittent Fever.
Huntington, Jedh.	New York,	Doctrine of Forces.
Jackson, Samuel Jr.	Philadelphia,	Fracture of the Cervix Femoris.
Jarratt, William A.	Georgia,	Digitalis.
Jeffrey, Richard W.	Virginia,	The Vesiculæ Seminales.
Jones, Walter F.	Virginia,	Permanent Contraction of the Fingers.
Jordan, Reuben G.	Alabama,	Cynanche Trachealis vel Tracheitis.
King, William R.	North Carolina,	Intermittent Fever.
Kortright, Chas. E.	Porto Rico,	Traumatic Tetanus.
Kuhn, Charles, Jr.	Philadelphia,	Jaundice.
Lansdale, Philip	Maryland,	Dysenteria Acuta.
Lewis, Charles S.	Virginia,	Phthisis Pulmonalis.
Madison, Thomas C.	Virginia,	Nitrate of Potassa.
Meigs, John F.	Philadelphia,	Pleurisy.
Meriwether, G. M.	Alabama,	Icterus.
Minor, George G.	Virginia,	Death.
Motley, Joseph F.	Virginia,	Dysentery.
Motley, James L.	Virginia,	Intermittent Fever.
Moore, Edward M.	New York,	Pericarditis.
Moore, William H.	Alabama,	Hydrophobia.
Moss, John W.	Virginia,	Hæmoptysis.
Muhlenburg, H. E.	Pennsylvania,	Acute Rheumatism.
M'Coy, John M.	Pennsylvania,	Hæmoptysis.
M'Elhenny, W.	Virginia,	Cholera Infantum.
Newell, Azariah D.	New Jersey,	The diseases of the teeth and their influence on the constitution.
Newton, Thomas	Virginia,	Coxalgia.
Noland, George G.	Mississippi,	Cynanche Trachealis.
Palmer, Ethelred J.	Georgia,	Scarlet Fever.
Payne, George B.	Virginia,	Arthritis.
Peck, Oliver J.	New York,	Hœmatemesis.
Pennington, J. J. P.	Virginia,	Scarlatina.
Pleasants, James A.	Virginia,	The importance of the Teeth in regard to their functions.
Rambo, Samuel	South Carolina,	Plastic force; power of Formation and Nutrition.
Randolph, Arth. M.	Florida,	Neuralgia.
Ray, John T.	Delaware,	Dyspepsia.
Reid, John H.	Alabama,	Dysentery.
Rives, William	Tennessee,	Pus.
Robertson, John	Delaware,	Inquiry into the cause of Labour.
Ruffin, William H.	North Carolina,	Jaundice.
Schuyler, Philip A.	New York,	Sleep and Dreaming.
Scott, Thomas L.	Virginia,	Circulation.
Semple, Matth., Jr.	Philadelphia,	Philosophy of the Practice of Medicine.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Shaw, Henry M.	North Carolina,	Modus operandi and therapeutical application of Emetics.
Shollington, W. E. J.	North Carolina,	Theory.
Silver, Silas B.	Maryland,	Epidemic diseases of North America.
Simmons, D. Dawley	North Carolina,	Physical and local diseases of the Liver.
Sinclair, Wm. B.	Virginia,	Miasmatic Fevers.
Skelton, John G.	Virginia,	Endocarditis.
Smith, Franklin F.	Philadelphia,	Neuralgia.
Smith, Isaac	New York,	Influence of Mind on disease.
Smith, Jervis S.	Pennsylvania,	Malaria.
Stanton, Darwin E.	Ohio,	Irritable Uterus.
Steiner, Henry H.	Maryland,	Jaundice.
Stith, Leonidas Y.	Alabama,	Chemico Physiology.
Stone, Richard W.	Georgia,	Nutritive Functions.
Strobhart, Jacob	South Carolina,	Animal Heat.
Studdiford, Henry V.	New Jersey,	Organic Life.
Sullivan, Isaac	North Carolina,	Acute Rheumatism.
Taylor, George L.	Philadelphia,	Dysentery.
Taylor, Henry S.	North Carolina,	The phenomena of Life.
Taylor, J. Winthrop	Philadelphia,	Physiological action of Poisons.
Thornley, John	Virginia,	Arsenious Acid.
Tucker, John E.	Virginia,	Pathology of Fever.
Tulloss, Samuel S.	Tennessee,	Acute Hepatitis.
Turner, William A.	North Carolina,	Treatment of fractured Os Femoris.
Turner, William M.	Tennessee,	Indigestion.
Tyson, James L.	Philadelphia,	Iodine.
Van Arsdale, Henry	New Jersey,	Appearances of the Tongue indicating disease.
Van Wyck, Ed. H.	New York,	Compression of the Brain.
Vadson, Jesse M.	Georgia,	Pathology of Fever.
Waddill, Charles D.	Mississippi,	Acute Gastritis.
Walker, Jacob G.	North Carolina,	Phthisis Pulmonalis.
Warren, Thos. D.	Virginia,	Atmospheric Air.
Waters, Franklin	Maryland,	Acute Hepatitis.
Watkins, Francis B.	Virginia,	Cholera Infantum.
Watkins, Lucien M.	Virginia,	Irritation.
Webb, William T.	Alabama,	Hygiene as applicable to Alabama.
Weir, David Park	Virginia,	Aneurism.
Williams, Thos. J.	Virginia,	Chronic Bronchitis.
Williams, Solomon P.	North Carolina,	Pathology of Cellular Tissue.
Willson, Wm. G. G.	Maryland,	Rubeola.
Wilson, Delany L.	South Carolina,	Arsenic.
Winfree, David C.	Virginia,	Acute Rheumatism.

At the commencement of July, 1837, the Degree of M. D. was conferred upon the following gentlemen:

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Byran, Daniel L.	South Carolina,	Caries and Curvature of Spine.
Carrere, M. E.	South Carolina,	Epidemic Cholera.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Davis, A. B. C.	Kentucky,	Scrofula.
Drake, John C.	North Carolina,	Dysentery.
Draper, A. Weld	Massachusetts,	Scarlatina.
Dunbar, Joseph	Mississippi,	Apoplexy.
Hamersly, Edwin S.	Pennsylvania,	Variola.
Haywood, W. D.	North Carolina,	Acute Gastritis.
Howard, Henry	Maryland,	Hydrocephalus.
Merillat, Charles	Pennsylvania,	Cynanchum Oleæfolium.
Magill, Buckner T.	Virginia,	Cystitis.
Minor, James M.	Virginia,	Phrenology.
Rochelle, James H.	South Carolina,	Acute Gastritis.

Total 157.

W. E. HORNER, M. D., *Dean.*

THE

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COLLABORATORS.

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GEORGE HAYWARD, M. D. *Professor of the Principles of Surgery and Clinical Surgery in Harvard University, Boston.*

WILLIAM E. HORNER, M. D. *Professor of Anatomy in the University of Pennsylvania.*

SAMUEL JACKSON, M. D. *Professor of the Institutes of Medicine in the University of Pennsylvania.*

SAMUEL JACKSON, M. D. *late of Northumberland, Pennsylvania, now of Philadelphia.*

C. A. LEE, M. D. *Professor of Materia Medica in the University of New York.*

JOHN GEORGE MORGAN, M. D. *late Professor of the Principles and Practice of Surgery in Geneva College, New York.*

VALENTINE MOTT, M. D. *Professor of Pathological and Operative Surgery in the College of Physicians and Surgeons, New York.*

JAMES MAC DONALD, M. D. *Resident Physician to the Bloomingdale Asylum, New York.*

JAMES MOULTRIE, JR. M. D. *Professor of Physiology in the Medical College of the state of South Carolina.*

REUBEN D. MUSSEY, M. D. *Professor of Surgery in the Medical College of Ohio.*

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THOMAS SEWALL, M. D. *Professor of Anatomy and Physiology in the Columbian College, District of Columbia.*

ASHBEL SMITH, M. D. *Surgeon General of the Texian Army.*

NATHAN R. SMITH, *Professor of Surgery in the University of Maryland.*

THOMAS STEWARDSON, M. D. *one of the Physicians to the Pennsylvania Hospital.*

A. F. VACHÉ, M. D. *of New York.*

JOHN WARE, M. D. *Professor of the Theory and Practice of Physic in Harvard University, Boston.*

JOHN C. WARREN, M. D. *Professor of Anatomy and Surgery in Harvard University, Boston.*

THOMAS H. WRIGHT, M. D., *late Physician to the Baltimore Alms-house Infirmary.*

EDITOR—ISAAC HAYS, M. D., *one of the Surgeons to Wills' Hospital for the Blind and Lame, &c.*

TO READERS AND CORRESPONDENTS.

We have received from C. W. Pennock, M. D., an account of a case of an entirely new and hitherto undescribed form of aneurism, with two beautiful coloured drawings. These last are in the engraver's hands, and will be ready for our next number.

Communications have also been received from Drs. Dickson, Lyles and Nott.

The following works have been received:—A Treatise on Digestion and the Disorders incident to it, which are comprehended under the term Dyspepsia. Adapted to general readers. By William Sweetser, the author of a Treatise on Consumption, &c. Boston, T. H. Carter, 1837. (From the publisher.)

Address to the Graduates of the Medical College of Georgia, delivered April 2nd, 1838. By the Rev. Elisha Sinclair, one of the Board of Trustees. Augusta, 1838.

Nature and Treatment of Diseases of the Ear. By Dr. William Kramer. Second edition of the author's Treatise on Chronic Deafness, improved and enlarged. Translated from the German, with the latest improvements of the author since the last London edition. By James Risdon Bennett, M. D., &c. &c. Philadelphia: Thomas, Cowperthwait & Co., 253 Market street. (From the publishers.)

The Epidemic Yellow Fevers of Natchez. An Essay read before the Jefferson College and Washington Lyceum, Dec. 2, 1837. By J. W. Monette, M. D. Natchez: 1838. (From the author.)

An Essay on the relation between the Respiratory and Circulating Functions. By Charles Hooker, M. D. Read at the Annual New-Haven County Meeting of the Connecticut Medical Society, April 12, 1838. Republished from the Boston Medical and Surgical Journal. Boston: 1838. (From the author.)

An Introductory Lecture delivered before the Medical Class of Harvard University on the 16th of October, 1833. By John Ware, M. D., adjunct Professor of the Theory and Practice of Medicine in the University. Boston: 1838. (From the author.)

On the Treatment of Delirium Tremens, being an Appendix to an Essay on this disease formerly published. By John Ware, M. D. (From the author.)

The Louisville Journal of Medicine and Surgery, extra. Louisville, 1838. (From Professor C. W. Short.)

Annual Address before the New York State Medical Society, February 6, 1838. By James M'Naughton, M. D., President of the Society. (From the author.)

University of Pennsylvania. Catalogue of the Trustees, Officers, and Medical Class—session, 1837-8. Philadelphia, February, 1838. (From the Dean.)

Charter of the Carroll White Sulphur Spring Company, in Alleghany county, Maryland; with a scientific report on the situation, properties, composition, &c., of the spring. Baltimore, 1838.

A Popular Treatise on Medical Philosophy, or an Exposition of Quackery and Imposture in Medicine. By Caleb B. Ticknor, M. D., &c. New York, 1838. (From the author.)

Proceedings of the President and Fellows of the Connecticut Medical Society, in Convention. May, 1838. With a List of the Members of the Society. Hartford, 1838. (From Dr. A. Welch.)

Gazette Médicale de Paris, January, February, March, 1838. (In exchange.)

Revue Médicale, January, February, March, 1838. (In exchange.)

Bulletin Genéral de Therapeutique Médicale et Chirurgicale, January, February, March, 1838. (In exchange.)

Journal des Connaissances Médicales Pratiques, January, February, March, 1838. (In exchange.)

Journal de Médecine et de Chirurgie Pratiques, January, February, March, 1838. (In exchange.)

Journal de Pharmacie, January, February, March, 1838. (In exchange.)

Journal des Connaissances Médico-Chirurgicales, January, February, March, April, 1838. (In exchange.)

The London Medical Gazette. February, March, April, 1838. (In exchange.)

The British and Foreign Medical Review, January and April, 1838. (In exchange.)

The Edinburgh Medical and Surigical Journal, January and April, 1838. (In exchange.)

The Médico-Chirurgical Review, January and April, 1838. (In exchange.)

The Louisville Journal of Medicine and Surgery, January, 1838. (In exchange.)

The Boston Medical and Surgical Journal, May, June, July, 1838. (In exchange.)

The Western Journal of the Medical and Physical Sciences, April, 1838. (In exchange.)

The Medical Examiner, May, June, July, 1838. (In exchange.)

Southern Medical and Surgical Journal, March, April, May, 1838. (In exchange.)

The Transylvania Journal of Medicine and the Associate Sciences, January, March, April, May, 1838. (In exchange.)

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "Carey, Lea & Blanchard, Philadelphia, for the *Editor of the American Journal of the Medical Sciences*." All letters on the *business* of the Journal to be addressed exclusively to the publishers.

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AMERICAN INTELLIGENCE.

THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

Article I. *Observations on Cerebral Auscultation.* By John D. Fisher, M. D. (Read before the Boston Society for Medical Improvement, March 26, 1838.)

In the summer of 1833, as many who are now present will recollect, I read a paper before this association, on the subject of a *cephalic bellows-sound* which I had discovered to accompany certain diseases of the brain. From the fact of this sound being detected in the head by means of auscultation, I denominated it the *cephalic bellows-sound.* In speaking of this symptom at that time in connexion with the pathological condition of the organs which evidently gave rise to it, I expressed the opinion that auscultation might hereafter prove to be an important means of diagnosis of cerebral, as well as thoracic diseases, and that the cephalic bellows-sound might turn out to be a pathognomonic symptom of affections of the head. Since expressing that opinion, I find from observation that certain audible murmurs are constantly being developed within, or passing through the head; and that the head, therefore, as well as the chest, presents all the conditions necessary to render auscultation available in investigating its diseases. In this communication, I shall speak of these normal murmurs, and shall then call your attention anew to cases in which a cephalic bellows-sound was heard; and lastly, shall offer an explanation of its causes. Before proceeding to describe the normal cephalic sounds, I will remark that all the directions which have been laid

down by authors for the employment of auscultation in diseases of the chest, should be our guide when we are to auscultate the head. In fact, the sounds which take place in the chest are more distinct and more readily caught by the ear, than those are which occur in the head; every possible caution, therefore, should be taken by the auscultator, that all obstacles should be removed which might embarrass him in his examinations.

In auscultating the head, mediate or immediate auscultation can be practised. But since the head is spherical, and can be readily and conveniently approached by the naked ear; and since the ear, from its peculiar shape and flexibility, may be more perfectly applied to the surface of the cranium than the stethescope can be, I prefer to employ immediate to mediate auscultation, and consider it the more simple and the more satisfactory method of the two.

In practising cerebral auscultation, the person to be examined should be in a horizontal position, with his head supported by a pillow. If it be a child, the examination can be more satisfactorily made while it is asleep than when awake; for while the child is asleep its head can be approached without danger of causing it to cry or to become restless. The head to be examined should be covered by a cap, napkin, or some soft covering. Such a protecting medium will prevent any noise which without it might arise from the friction of the hair against the auscultator's ear and head. By attending to these precautions I can, by applying my ear to the heads of healthy children, hear a sound which is evidently produced by the impinging of the air against the walls of the nasal cavities during the act of respiration. It commences and terminates with the respiratory act. This sound is peculiar, and is readily recognised. It is the one which first attracts the attention, and resembles in all respects, except in intensity, the respiratory murmur caused by the air passing through the nostrils when the mouth is closed, and which is then audible to the person breathing. This sound, which I would denominate the *cephalic sound of respiration*, is heard rather more distinctly during expiration than inspiration; and becomes somewhat modified when the membrane of the nose is affected by a cold or other cause. A second sound which strikes the ear is one whose impulse seems to be transmitted from a distance. It is evidently that of the heart, and is a soft mellow sound, resembling that produced by softly palpating our cheeks when distended by air. It corresponds with the action of the heart, and varies in frequency and intensity as the contraction of that organ varies in rapidity and power. It may be called the *cephalic sound of the heart.* The cephalic sound of respiration and the cephalic

sound of the heart are the only sounds which auscultation discovers in the heads of healthy children when they are asleep or at perfect rest. If, however, the child should cry, or speak, or swallow whilst the ear is applied upon its head, then other sounds may be heard. When the child cries or speaks, the sound of its voice is very distinctly heard at the surface of his head, or on whatever part of it the ear may be placed. It is generally sharp and piercing, and seems to arise out of the cranium itself, so near does it appear to be to the ear; and when it is heard through the stethescope, it seems as if it were vibrating about the mouth, and even to pass into the canal, of the instrument. This sound I would term the *cephalic sound of the voice.* It varies somewhat in its tone and apparent approximation to the ear, at different parts of the head. At the unclosed fontanelle it is less sharp and somewhat more mellow and diffusive in its character than at any other part of the head, and seems to be further removed from the surface. The other sound which attracts the attention attends the act of deglutition. When a child swallows any fluid, a sound of a compound character is readily distinguished by applying the ear to its head. I hardly know what the sound resembles, or to what I can compare it. It is peculiar, and cannot be described; but it can never be mistaken for any other bruit after it has once been observed and recognised. It has a liquid, and a dull, massive tone, and is evidently caused by the act of deglutition. I shall therefore denominate it the *cephalic sound of deglutition.* This last named sound may be best noticed while a child is nursing—for then it is less liable to be obscured or masked by the cephalic sounds of respiration or by any movements of the head.

I have described these sounds as they are developed in the heads of infants previous to the closure of the anterior fontanelle. They become modified in some respects by the influence of growth, and the density of the brain and cranium. This is more strikingly the case with the cephalic sound of the heart. In early infancy and before the period of dentition, the cephalic sound of the heart is distinguished by a softness and diffusiveness of tone which it does not possess afterwards. In youths and adults the sound acquires a coarser and harsher tone, and seems to be more remote from the ear. The cephalic sounds of the voice and deglutition are not so sensibly affected by the growth and increased density of the cranium and its contents. All the sounds which I have now described are most distinctly heard at the summit of the cranium, although they may be easily detected at any portion of its surface. Such are the murmurs or bruits which are constantly occurring in, or traversing, the heads of healthy individuals, and

which auscultation reveals and enables us to appreciate. They unquestionably are the results of the functions to which I have referred them.

These cerebral murmurs, I find from observation, become modified by the presence of certain diseases within the cranium, and thus become symptoms of cerebral affections. This is manifestly the case with the cephalic sound of the heart. The cephalic bellows-sound which, in 1832, I discovered to accompany certain diseases of the brain, is a modification of the cephalic sound of the heart; and I beg now to direct your attention to some cases in which it presented itself as a prominent symptom.

In the first place, I will remark, that I have found it to be a symptom of chronic hydrocephalus. Case of Walter W. Baxter, as recorded in my note book, July 16, 1832. This child, who is now two years and seven months old, was strong and well formed at birth, and enjoyed perfect health until he began to cut his first set of teeth. The period of dentition was one of suffering and distress to him. When thirteen months old, he had cut but two teeth, and was labouring under a severe attack of cholera infantum. At eighteen months he was unable to walk, and at about this period his mother thought that his head began to assume a singular shape and to increase in size. He was removed to the country for the benefit of his health, but he remained extremely feeble for a long time. His head continued to enlarge, and a slight deformity of the spine was noticed in March last. He now, July 16, 1832, presents the following symptoms:

External appearance.—Body and limbs much emaciated; muscles soft, flabby; head unusually large, its scalp seems to be drawn tightly over it. The fontanelles remain unclosed—the anterior one is an inch in diameter, and is filled up by a soft, pulsating tumour, which projects slightly above the surface of the cranium. The coronal and sagittal sutures are unclosed, and the latter suture can be traced down the frontal bone to near the nose. His senses appear intact, and mental powers good; but he is unable to articulate words, and exhibits no disposition to imitate sounds. For some time past the child has been subject to slight spasms, and has at times uttered screams during sleep. On applying my ear over the anterior fontanelle, which I was induced to do from observing its strong pulsatory motions, I heard a distinct bellows-sound. This is a novel phenomenon, and has never been noticed before. The sound is coarse, abrupt, rasp-like—is synchronous with the pulsatory motions at the fontanelle, and with the arterial pulse, and occurs one hundred and forty-four times in a minute. It can be heard over any portion of the cranium, but it is

most distinct at the anterior fontanelle. While listening to this sound, I can hear a murmur accompanying his respiration, and also a sharp resonance of his voice when he cries or utters any vocal tones. These sounds are distinct from and independent of the bellows-sound, and of each other, and are constant in their occurrence. This new auscultic symptom, which may be properly called the *cephalic bellows-sound,* is confined to the head, as nothing resembling it can be detected in the heart, or great blood-vessels passing from it, or in any artery or organ below or exterior to the head.

This new symptom was first noticed on the 16th of July, 1832, and the discovery of it induced me to follow the progress of this patient's disease, and to auscultate his head whenever an occasion presented. The child remained feeble and sickly until he had cut a number of his teeth. During the year which followed my first examination of the boy, I occasionally went into the country to see him. On the 13th of July, 1833, I saw the child and recorded the following note respecting him:—The boy's health has gradually improved during the past year, under the treatment prescribed for him by Dr. Thaxter, and he is now apparently free from any dropsical affection. His head has decreased in size, and measures less than it measured one year ago. The sutures and the posterior fontanelle are closed and firm, but the anterior fontanelle is not yet perfectly ossified. The mental powers of the child do not appear to have suffered by the disease, as they are now as active and as effective as those of children of his age generally are. About four months ago he began to imitate sounds and to articulate words; and is now able to talk and pronounce his words correctly. During the course of his malady a curvature of his spine took place, which has rendered him incapable of sustaining his weight, and of walking. As the absorption of the fluid within the cranium took place, which was manifested by the gradual diminution in the size of the head, and by the closing of the sutures, the cephalic bellows-sound became less and less distinct, and finally disappeared.

The above is the last regular record that I have made of the history of this interesting case. I am able, however, to observe, that during the last four years and a half, the boy has enjoyed tolerable health, and notwithstanding his deformity caused by the curvature of his spine, he is active and vigorous. He has attended school constantly for the last three years, and is distinguished for his intelligence and the rapidity with which he acquires knowledge. This last is an interesting fact in the history of this boy—as it furnishes another proof that the existence, for a long time, of an extensive dropsical effusion around the brain in early life, does not necessarily derange the mental

faculties or diminish their power. The above case was referred to in my first paper on the subject of the cephalic bellows-sound. I have noticed this same symptom in two other cases of chronic hydrocephalus. The following is a brief account of one of them, which was also noticed on a former occasion. The subject of it has since died, and I now add to the history of the case an account of the pathological condition of the brain. The following are the notes which I made of the case on the 5th day of October, 1832. Henry Orr, aged nine years, has been sick from infancy with some affection of the head, supposed by his physician to be dropsy. The prominent symptoms, as related to me, have been—a gradual enlargement of the head; a separation of the sutures, and unossified state of the fontanelles until a late period; retarded developement of the body; frequent convulsions, resembling those of epilepsy. At the present time his head is of unusual diameter and much deformed. The sutures and fontanelles are firmly closed, and the scalp is expanded over the cranium as if by force. His eyes project very much, and appear to be thrown forward from their sockets. The left eyelid is morbidly distended, hangs loosely over and completely covers the globe of the eye. The pupil of each eye is much dilated, and that of the left is so much so that its diameter corresponds very nearly with that of the cornea. The boy, however, sees quite well, and his other external senses are normal. His mental powers, those of memory and judgement in particular, are enfeebled; and he is represented to have lost in a gradual manner the power of remembering events of daily occurrence. His appetite and digestion remain tolerably good; yet he has become much emaciated, and is now, and has been for a long time, unable to walk. On placing the stethescope or my ear upon his head, I hear a feeble bellows-sound. This is rather loudest, I think, at the space occupied by the anterior fontanelle and along the sagittal suture, but it is audible at other parts of the head. The sound corresponds with the pulse, and is short, abrupt and coarse. The murmur of respiration is heard very distinctly, and the sound during inspiration seems to pass up through the instrument towards my ear, while during expiration it appears as if it was rushing downwards through the stethescope, and to recede from my ear. The resonance of his voice, when he speaks, seems to be playing around the rim of the instrument, and is loud, and from its acute tone is sometimes painful to the ear.

The lad whose history I have now briefly related, died on the 1st day of March, 1835, two years and five months after the observations I have recorded were made. During this interval of time, as I learn

from Dr. Ware, of Milton, his medical attendant, he was constantly subject to convulsions, or epileptic fits, and complained of a continual deep-seated pain in the left side of his head. He gradually became more and more emaciated and feeble, losing the power of vision of his left eye; but excepting his memory, he retained possession of his mental powers to the last. A post-mortem examination of his head only was made, which exhibited the following pathological appearances, as reported by Dr. Ware. The bones of the cranium were firmly united; the dura-mater adhered strongly to the cranium, and was much thickened in spots. The convolutions of the brain were much flattened. The arachnoid and pia-mater were thickened and adhered strongly to each other and to the brain—no fluid was found within or between them and the dura-mater, or exterior to the brain. The brain itself, as a whole, was soft. The left hemisphere was much diseased; portions of the same being very hard, resembling condensed fibrous structure, and sounding like cartilage when incised. In the midst of these hard portions of the brain were found parts, of the size of bullets, in a state of suppuration. The right hemisphere, although not in a healthy condition, yet was comparatively free from disease. The ventricles were enormously distended and completely filled with a milky serous fluid, amounting to more than half-a-pint. Considerable fluid was also found at the base of the brain, and some oozed from the softened portions of the organ when cut.

I will observe, secondly, that I have noticed the cephalic bellows-sound to accompany simple congestion of the cerebral organs. The second case in which I detected the symptom was this: A little girl, four years of age, residing at Watertown, fell from a second story window, in the summer of 1832, and struck her head upon the brick pavement below. She was taken up senseless, and lifeless, as was supposed by her friends. I saw her while in this state by invitation of her physician, Dr. Hosmer. On auscultating her head, I at once detected the short, abrupt, rather coarse bellows-sound, which was readily heard also by Dr. Hosmer. It was independent of the cephalic sounds of the respiration and voice, and was synchronous with the arterial pulse. Active remedies were prescribed and applied through the night, and on the next morning the child appeared better. We found the bellows-sound still present in the head; but it was not so distinctly heard as on the previous evening. At my request Dr. Hosmer paid particular attention to this new symptom, and reported that "the bellows-sound continued to be heard while the excitement was active, and that it by degrees died away, as the inflammatory

symptoms abated." The child recovered from the injury, and I presume is now living.

It is but a short time since I was called to a child in Fayette street, who had fallen from a second story window upon a plank pavement, and struck his head. I saw him in one hour after the accident. He had recovered somewhat from the immediate effects of the injury, but was still inclined to sleep. On applying my ear to his head, I readily caught the bellows-sound. As in the other case, it corresponded in frequency with the arterial pulse, and was short, coarse, abrupt. In twenty-four hours the child had recovered from the effects of the fall, and no longer presented the cephalic bellows-sound. I have noticed this auscultic phenomenon very many times under other circumstances which indicated decided cerebral congestion. Every medical practitioner is a daily witness to the great arterial and cerebral excitement and frequent spasms which attend protracted and painful dentition in children. In all these cases the organs within the cranium are evidently in a state of congestion, and the brain itself is pressed upon by the congested and excited vessels which surround and enter it. Most of these cases are attended by the cephalic bellows-sound; and I doubt not but that every member of this association has at this moment under his care, children in whose head the bellows-sound may be heard. I think I may say that in six cases of painful dentition out of every ten which have come under my notice, I have detected the cephalic bellows-sound. It is characteristic, and cannot be mistaken when once observed. It is generally short, abrupt, coarse, rasp-like, and may be heard at every part of the cranium, but most distinctly at the unclosed fontanelle—corresponding always to the pulsatory motions observed at this opening, and synchronous with the heart's pulsations.

I have collected some interesting facts touching this cerebral bellows-sound attendant on painful dentition, which I think go to prove the existence of cerebral congestion, and also the valuable effect of dividing the gums for the relief of this congestion. I find that the cephalic bellows-sound, except in actual diseases of the head, cannot be detected in children previous to the commencement of dentition, and that it ceases to be heard after the teeth have pierced the gums: and in cases where there is a long interval between the successive appearance of two crops of teeth, the bellows-sound, which was developed during the cutting of the first crop, will sometimes cease during the interval, and occur again during the severe excitement produced by the cutting of the second crop of teeth. After all the first set of teeth have made their appearance, the sound dies away, and seldom

occurs during the second dentition. In three or four instances, however, I have noticed it in children during the process of the second dentition, but never in the adult except in actual cerebral disease. I have stated above that the cephalic bellows-sound disappears occasionally during the interval which occurs between the cutting of two crops of teeth. I will in this connexion observe, that I have recently noticed that the simple operation of lancing the gums may cause the bellows-sound to cease. A few days since, I was called to a child who had been subject to spasmodic convulsions caused by teething. She had just recovered from an attack of convulsions on my arrival, and was pale and exhausted, and apparently asleep. The bellows-sound was very audibly heard in her head. Her gums were swollen and tender by the protruding teeth, and I immediately divided them with a lancet. This seemed to give great immediate relief to the child, and she rested unusually well during the succeeding night. On auscultating her head the next morning, I found that the bellows-sound, which was very distinct twenty hours before, was no longer to be heard. Here was a case of cerebral congestion giving rise to spasmodic convulsions, the cephalic bellows-sound, and other symptoms; and relieved, at least in a degree, by the operation of lancing the gums. I have also noticed the cephalic bellows-sound in cases of cerebral congestion caused by hooping cough. The sound was heard at the moment the paroxysm of cough ceased, and continued but for a moment, and only while the blood-vessels of the face and head were crowded and congested by their contents. It required much cautious attention to detect the sound in these cases, as the panting of the child, and his restlessness, and the increased sound of the respiration immediately succeeding the paroxysm, all conspire to render the symptom sought for inaudible. From the observations I have made, however, I am inclined to believe that the cephalic bellows-sound is developed during every severe paroxysm of hooping-cough, and that it disappears as soon as the patient begins to breathe freely again, and the circulation becomes unobstructed.

In the third place, I have observed the cephalic bellows-sound to accompany acute inflammation of the brain and its membranes with serous effusion into or around them. In 1833, I made the following statement to this association: A lad aged nine years, and a child aged three, were under my care at the same time, who exhibited all the common and acknowledged symptoms of acute hydrocephalus. The cephalic bellows-sound was present in both. In the oldest boy the sound was loudest, and in both it was soft, diffused, prolonged—resembling the sound produced by the rubbing of two pieces of soft and

polished soap-stone together. At times it passed from the intermittent into a continuous murmur. This change in its character was noticed particularly during long intervals of respiration when the freedom of the circulation was in a degree obstructed. The sound in the oldest patient was also characterized by a sort of singing or buzzing, resembling that of a moscheto, and might have been denominated the musical bellows-sound of the head. The sounds in both patients corresponded with the pulse, and were heard distinctly for several days. The oldest boy was sick, or under medical treatment, twelve, and the youngest, thirteen days. In the former I detected the cephalic bellows-sound seven days, and in the latter five days, previous to their death. In both it was feeble when first heard, but it gradually increased in strength, and continued to be loud and distinct until the physical forces began to sink. It then became less and less audible in proportion as these powers failed and the force of the arterial pulse diminished.

On examining these subjects after death, a decided flattening of the convolutions of the brain was observed—the blood-vessels on the surface, at the base and in the substance of the organ, were much engorged and distended, and a considerable quantity of serum was found between its membranes, in its ventricles, and at its base. The remaining organs of the bodies were in a normal condition.

A short time after the occurrence of the cases just cited, I made the following short record of a similar disease:—June 23d, 1833. I have just examined a child by the name of Charles Bowman, aged seven months, who is a patient of Dr. J. B. S. Jackson. Dr. Jackson pronounces the disease under which the child is suffering, to be dropsy in the head. This opinion is founded on the symptoms which the child has exhibited and those which are now present, viz: drowsiness and a constant disposition to sleep, stertorous breathing, dilated and insensible pupils, spasms, &c. Besides these characteristic symptoms, Dr. J. yesterday detected a well marked bellows-sound in the head, and observed that he did not recollect of ever having heard the bellows-sound more distinctly in any case of cardiac disease. I recognised the sound at once, on whatever part of the child's head I placed my ear. It is exactly synchronous with the pulsations of the carotid and temporal arteries, and occurs one hundred and sixty times in a minute. The sound is distinct from that of respiration, and ceases to be heard on compressing the carotid arteries. The anterior fontanelle is open, and a strong impulse is seen and felt against it. The child died on the next day, and its head on examination presented the following appearances: The right half of the brain was much more

leveloped than the left; the convolutions of the whole organ were flattened, and the blood-vessels moderately distended. Lymph was effused under the pia-mater, and a small quantity of serum was found in the ventricles and at the base of the brain. The whole cerebral substance was soft, and yielded a considerable amount of limpid fluid on being dissected.

I will cite one more case under this head, and hope its length will not render it the less interesting or acceptable. In the evening of the 25th of February, 1835, I visited with Dr. Hildreth, a little girl aged eleven months. Dr. H. gave me the following account of her sickness. He was called to see her for the first time on the morning of the 23d, and found her feverish, breathing rapidly and laboriously, and suffering from slight cough. Her pulse 147, and number of respirations 55 in the minute. Her bowels were full, somewhat swollen; chest resounded well; lungs admitted air freely. An emetico-cathartic was administered, the cathartic effect of which continued during the night and following day; and it not being sufficiently checked on the morning of the 25th, one grain of Dover's powders was ordered to be given the child every three hours. Just after the child had swallowed the third powder, the Doctor called to see her, and found her much altered in her appearance—pulse intermittent—respiration irregular and unequal. She was apparently quite insensible, presenting the appearances which follow the taking of an over dose of opium. Dr. H. instantly ordered an emetic, which operated promptly, and caused the ejection of the last powder. When I saw the child, which was soon after the operation of the emetic, she was lying on her back, in a kind of lethargic sleep, her head resting on the nurse's arm. The following are the symptoms exhibited by the patient at that time. The child's body is warm in every part.

External appearance. Body plump; countenance pale; limbs lay inactive; eyelids partly open—the scalp appeared as if tightly drawn over the cranium; the temporal vein of the left side of the head, and also its branches, greatly distended, whilst the right temporal vein or its branches were not even visible. The anterior fontanelle was seen pulsating, and distended so as to project above the general surface, in the form of a rounded tumour. The movements of the chest were free, but very irregular; the abdomen was tumid.

Touch. The scalp felt as if it was stretched over the bones it covered; the anterior fontanelle was open to the size of a cent, and pulsated strongly against the finger at each contraction of the heart; the abdomen, though distended, was soft and yielding under the hand.

Percussion. The chest resounded well in every part; the abdomen yielded a slight tympanitic sound. *Respiration* frequent, irregular, 57 or about this number in a minute. The child would cease breathing for five seconds, and then take one long and deep inspiration, and five or six other and shorter, less deep, and more rapid ones; then followed an intermission of five seconds, after which the child would take a long and deep inspiration again, and five or six other ones, as before. This was the character of the respiration during the whole of my visit.

Auscultation of the respiration. The respiratory murmur natural in front part and left side of chest; the right side and posterior portions of the chest not examined, but there was no apparent difficulty to the free entrance or expulsion of the air into and from the lungs.

Circulation. The pulse was 140 in the minute, and the pulsations irregular in their succession and unequal in their power. For instance, during the full and hurried respiration the pulse was quick and strong; but during the time the respiration ceased, which was for the space of five seconds, the pulse became slow and feeble, and would almost cease; but the moment the long inspiration occurred, it would suddenly become full and strong, and increase in rapidity during the first three or four respirations, and then would diminish in frequency during the remaining more feeble respirations and during the intermission or interval, at the termination of which the pulse would be almost gone. This was the character of the pulse for the half hour I was with the child. The sound and impulse of the heart were evident over the largest portion of the front part of the chest. The carotid arteries beat freely and with vigour. On applying my ear to the child's head, I at once observed a very loud and strongly marked bellows-sound. It was much more distinct and rapid than the sound of respiration. It corresponded in frequency and was synchronous with the action of the heart, and with the impulsive motions observed in the unclosed fontanelle. It varied in frequency and in strength with the frequency and strength of the arterial pulse. It was loudest and most distinct during the two or three arterial pulsations which immediately succeeded the intermission of the respiratory movements, and during the long and deep respirations which followed the interval of repose. The bellows-sounds were then distinct from each other, but as the respirations and arterial pulsations became more frequent and feeble, the sounds ran into each other, constituting almost a continuous murmur. They could be heard very distinctly in every region of the head, the frontal, parietal, temporal, occipital, or on whatever part the ear might be

placed; but the *bruits* appeared loudest and most powerful when the ear was applied immediately over the anterior fontanelle—in fact, they were readily distinguished by the ear when removed to the distance of three inches from the fontanelle. The character of the sound varied somewhat in different portions of the head:—at the fontanelle it corresponded to the pure bellows-sound as described by Laennec, and was there distinguished by a peculiar softness and diffusiveness; but beneath the solid cranium it was coarse or harsh, approaching to the character of the sound of the saw or rasp. It seemed to arise out of the bone itself, and not to come from a distance. Over the sincipital and upper portion of the occipital region of the head, the sound was peculiarly distinct, and during the rapid respirations and arterial pulse it was characterized by a sort of musical murmur; and during the slow respirations and pulsations of the arteries, the sound seemed to be playing immediately beneath and against the inner surface of the ossified cranium over which the ear was placed, and resembled very strikingly the sound which may be produced by gently rubbing the inner table of the cranial bone with the finger whose cuticle is thick and rough. The sound varied in force with the varied power of arterial action.

During my examination of the patient, I made the following experiments:—Whilst my ear was applied to the head of the child and attentive to the bellows-sound, I made a gentle pressure upon the distended fontanelle with my fingers, and the sound gradually changed from the soft, diffusive *bruit de soufflet,* to a coarse, short, rasp-like sound, becoming at the same time, and in proportion to the degree of pressure, less and less audible. Although the pressure exerted was at times very considerable, yet it did not cause the sound entirely to cease. This experiment I repeated a number of times with the same result. It produced a good deal of uneasiness in the child, particularly when the pressure was greatest, causing it to move its arms and head, and to groan and cry out. I embraced the occasion to repeat an experiment which I had made in previous cases. I compressed the carotid arteries by means of my fingers, while listening to the bellows-sound, and I observed that the sound would gradually cease while the arteries were under compression; and when the circulation of the blood in them was completely arrested, no bellows-sound could be detected in the head. This experiment I repeated three times in this case, and always with the same effect.

From this period, the child exhibited all the common symptoms of cerebral inflammation until the evening of the 2nd day of March, the fifth day after I saw it. The cephalic bellows-sound continued to be

heard with varied intensity until the day but one before the child expired. On the morning before it died, I made the following note of the symptoms which I observed:—March 2nd, 10 A. M. The child is lying senseless in its nurse's arms. Its eyelids are open, pupils immoveable, sight gone; respiration and pulse short and quick. Its hands and feet are spasmodically contracted and are turned inward; and the fingers of each hand are firmly bent upon the palm of the hands. The cephalic bellows-sound cannot be distinguished; it does not exist, or else it is completely masked by the noise of respiration. While searching for the bellows-sound, my ear being closely applied to the child's head, she uttered two or three sudden cries, and the sound of its voice seemed to come directly from the bones of the head and to enter my ear, and was distinguished by a peculiar sharp, metallic, ringing tone, unlike any sound which I have ever noticed by auscultating the head. From this period the child gradually failed, and died at 11 o'clock, P. M., after having experienced during the day severe and rigid spasms, and uttering many shrieks and piercing tones.

Autopsy of this child's head, which was alone examined, exhibited the following appearances:—Scalp thin but healthy. On tearing it from the cranium, blood oozed from numerous points of its cranial surface. The bones of the cranium every where healthy; dura-mater natural. On lifting the brain from its cavity and raising the dura-mater from its surface, a vast quantity of lymph was found deposited in layers over the organ, apparently within the arachnoidal cavity. At the base of the brain the deposit of lymph was extensive, increasing in depth from the optic nerves, where it existed in considerable quantity, backwards, so that the nerves at the base of the brain, the pons varolii, medulla oblongata, and a large portion of the cerebellum, were covered by a continuous layer of lymph one quarter of an inch thick. The lymph extended in a continued sheet upwards from the base over the anterior lobes of the brain, covering one-third of the whole upper surface of the hemispheres. It also extended down between the hemispheres anteriorly and between a few of the convolutions, but in not so thick a sheet as over the surface. The lymph was light coloured, having an exceedingly faint tinge of yellowish-green. At the base of the brain it had the consistence of soft-boiled egg. On the upper surface of the left anterior lobe it was like the white of an egg well boiled, its surface being perfectly smooth and polished, as if covered by an exceedingly delicate membrane. The arachnoid and pia-mater appeared well enough, the vessels of which did not appear much engorged. The convolutions of the brain were somewhat flat-

tened, and the organ itself was rather soft and moist. The white portion of the left hemisphere posteriorly was of a decidedly reddish-grey colour, and the whole of both hemispheres had a tinge of the same. The lateral ventricles contained from two and a half to three ounces of perfectly limpid serum; the septum lucidum of good consistence; the fourth ventricle contained perhaps one-third of a tea-spoonful of thin pus of the same colour as the lymph. The spinal marrow was surrounded by lymph as far down as could be seen from the cavity of the cranium.

Fourthly, I have found the cephalic bellows-sound to accompany suppuration of the brain, as in the following case. William Doughty, aged three years, has been troubled for more than twelve months with sores in his ears, attended at times with a discharge of offensive matter. The affection of the ears was supposed by the parents to have been the result of the measles. During the last two or three months the discharge from the right ear has been copious and very offensive, and the child has been unusually fretful and peevish. Four days since, he appeared more unwell than usual, and has since exhibited considerable febrile excitement. He referred his suffering to his right ear, and has manifested great irritability, rolling his head frequently from side to side over his pillow, and occasionally crying out suddenly while asleep. At the present time, November 1st, 1833, he presents most of the symptoms now described, and is so exceedingly irritable that he will not allow me to examine him without much trouble. His countenance is expressive of much suffering; his respiration is hurried; tongue coated; bowels free, but dejections are of a dark colour; pulse 132 in a minute, and rather hard. He is so irritable and restless that I find it impossible to examine him by means of auscultation; he will not permit me to apply the stethescope or my ear to his chest. This cavity, however, sounds well on percussion, and its movements are apparently free. The symptoms, so far as they can be studied, seem to indicate that the head is the principal seat of the affection. Leeches were applied to the temples, and small doses of calomel and chalk were prescribed to be taken every four hours.

November 2nd. The effect of the leeches and powders was favourable, and the child slept considerably during the night. His sleep, however, was disturbed, and he cried out suddenly, and had during the night what his mother called ague fits. At present his symptoms are nearly the same as yesterday. He may be somewhat more calm, however, and less refractory; the respiratory murmur is normal in upper part, but is obscure in lower portion, of the lungs; he, however, is still so restless and irritable, that no satisfactory auscultic examina-

tion can be made. The powders were ordered to be continued, and vesication of the scalp was prescribed by means of strong tincture of flies.

November 23d. The child passed a restless night, and had frequent ague fits. These he seemed to anticipate; for before they came on, he would complain of being cold, fold his arms, ask for more clothes, or to be carried to the fire. These ague turns were immediately preceded by paleness of face, great coldness of surface; and during their existence he would groan and scream out. They lasted commonly twenty or thirty minutes. His pulse are 140 in a minute, and hard; and he now exhibits more evident symptoms of pulmonary affection. His respiration is shorter, and inspirations are less deep; the movements of the chest, however, are quite free. In consequence of his great irritability and restlessness, auscultation does not communicate any satisfactory information. The chest, on percussion, resounds quite well, except in inferior portions, where it is, I think, less sonorous than natural. He has a light cough, but no expectoration; his breath is offensive, or else the offensive smell noticed arises from the matter which flows from the right ear. His head is hot, and the arteries of the neck and temples are seen to pulsate with great activity and energy. His vision is perfect, and there is no apparent alteration in the appearance or action of the pupils. On applying my ear to his head, which I am now able to do for the first time, I distinguish a very distinct bellows-sound. It varies in strength in different parts of the head, and is very audible during a momentary suspension of respiration. It is synchronous with the heart's pulsations, and with those of the temporal and carotid arteries. *Diagnosis*—principal and most serious difficulty is in the head, but there is also some disease of an inflammatory kind in the chest. ℞. Vesicate the scalp more extensively; continue powders; and apply a mustard poultice to the sides and posterior parts of the chest.

November 25th. During the last two days the child has exhibited the same general symptoms. He has had a number of severe ague fits, which, according to the report of his mother, resembled the ague fits of intermittent fever. They usually lasted from twenty to thirty minutes, and were succeeded by a disposition to sleep. The bellows-sound in the head continues to be heard very distinctly over the top of the head, but it is much the loudest at the sides and over the temporal bones near the ears; at times it passes into a continuous murmur. From this period until the 5th day of December, he manifested great uneasiness; sleeping but little, frequently crying out during sleep, and exhibiting more decided symptoms of pectoral as well as

cerebral disease. The usual remedies were administered to combat these symptoms, with varied effects. At times the child would amuse himself with his toys; but his strength continued to fail. The discharge from his right ear continued to the last, and was purulent and offensive; and two days before his death the discharge was composed mostly of blood, copious and extremely fetid. The cephalic bellows-sound was evident until twelve hours previous to his death, when it could be no longer heard. It decreased in distinctness as the child failed in strength and the arterial pulse became feeble; and during this great prostration of the physical powers it was sometimes difficult to distinguish the bellows-sound from the sound of respiration—the latter, in consequence of its rapidity, often masking the former. At no time previous to the last day of his sickness did he exhibit any loss of vision, the pupil of each eye being always contractile and natural. A few hours before his death he ceased to discern objects, the pupils being unaffected by the stimulus of light. He breathed with embarrassment, and with the "death rattle;" the cephalic bellows-sound could not be detected; the pulse at the wrist ceased, and the child died, after experiencing some partial spasms of the limbs and muscles of the neck and face.

The following were the pathological conditions of the head and chest of this child thirty hours after death.

The scalp and cranium healthy; the dura-mater and the other membranes of the brain free from disease; no unusual turgescence of blood-vessels; no effusion of serum between the membranes or over the upper surface of brain; the brain itself rather soft; several small abscesses were found in its substance on being sliced—one was discovered in the right corpus striatum, one in the right optic thalamus, and one in the most anterior portion of the posterior lobe of the brain. These three abscesses were each of the size of a large cherry. Besides these, five or six smaller ones were found in different parts of the cerebrum. These abscesses seemed to have a strong predilection for the grey substance, being in almost every instance entirely confined to it; and when they did encroach upon the medullary substance, they did so to an exceedingly small extent. True pus was found in these abscesses, sometimes unmixed, but oftener mixed with grumous blood. The abscesses contained no indurated walls; on the contrary, the cerebral substance around them was softer than natural. Very little, not more than ʒi. of clear serum was found in each lateral ventricle; some serum, however, was constantly flowing out from between the inferior portion of the cerebrum and tentorium during the examination, and about ℥i. was found at the base of the brain. The right

lateral sinus, just before it passes out of the skull, was greatly diseased. A portion of its coats appeared to have been mostly or quite destroyed, and replaced by half organized lymph, or perhaps what appeared like lymph was the tissue partially gangrened. It seemed as if a slight jar given to the body during life would have caused a rupture of the sinus into the arachnoidal cavity. On raising the duramater from the petrous portion of the temporal bone, the bone was found of a dark greenish colour, but neither softened or carious. The external meatus of the ear being cut open, a kernel of coffee was found closely impacted as far in as it could have been driven, and surrounded by a bed of soft cheesy secretion. It was quite black, and its inner extremity somewhat swollen. No trace of the tympanum or the small bones of the ear could be discovered.

Thorax. The pleura healthy. In the lungs were found a number of abscesses, varying from the size of a cherry to that of a small bullet; these were filled with thick pus, mixed with grumous blood, which had almost a fœcal smell. Some of the abscesses approached quite to the surface of the lung, and were decidedly gangrenous. In some small portions the pulmonary substance was firmer and more condensed than natural, as if affected with a degree of peripneumonia. No tubercles found in any part of either lung. The abdominal organs in a healthy state.

I will state, fifthly, that the cephalic bellows-sound has been noticed in cases of induration of the brain with slight effusion into the ventricles and at the base of the organ. In the night of the 22nd of January, 1833, I was called suddenly to visit Mrs. S., aged twenty-seven years, who had been attacked while asleep with severe convulsions. I learnt that this lady had, for more than two years, been subject to severe palpitations of the heart, which for the last few months had prevented her from using any laborious exercise. During this period her face and limbs became much bloated, and she suffered much pain in the head, and complained of ringing or musical sounds in the ears. On the evening previous to my visit, she retired to bed as well as she had been for some time past, and rested as well as usual, until about one o'clock, when she uttered a sudden and piercing scream, awakening her husband, and became severely convulsed. The spasms continued for about twenty minutes; on recovering from them she complained of oppression about the heart, and of a loud musical sound in her head. The sound she described as delightful, and its tones musical and harmonious; to use her own expression, "the music is beautiful, heavenly." At this moment I applied my ear to the top of her head, and heard a full, well characterized bellows-sound, cor-

responding with the heart's pulsations. The sound was loud, prolonged, diffusive; and while she held her breath for a moment, it passed into a momentary whizzing murmur. The lungs exhibited no signs of disease; the action of the heart was somewhat tumultuous and irregular, and its impulse powerful and heard over a good portion of the chest; the organs of digestion and secretion healthy; mind active and apparently unaffected. Notwithstanding the remedies which were prescribed, she continued to complain of the same symptoms and to suffer spasmodic convulsion a number of times a day for seven days, when she died. On examining the body, thirty hours after death, the lungs were found to be healthy, and a small quantity of serum was deposited in the cavity of the pleura. The heart was greatly enlarged and adhered firmly to the pericardium; its cavities were filled with coagula, and were somewhat dilated; the aortic valves were thickened and rigid; the remaining valves of the organ were healthy. On extending the examination to the head and dividing the cranium, the dura-mater was found to be thickened in various spots; the convolutions of the brain somewhat flattened, and here and there covered with thin layers of lymph. The brain was exceedingly firm and hard, and could be handled and rolled about without deforming it; it cut up like stiff putty, and exhibited a fibrous structure throughout; the fibres could be traced from the central part even to, and into the cortical substance of the organ; the ventricles contained a small, rather more than the usual, quantity of fluid, and about an ounce was found at the base of the brain.

I have noticed the cephalic bellows-sound in one other case of induration of the cerebral substance with slight effusion. The subject was a child aged two years, who had suffered severely from hooping cough. I saw it on the 2nd day of February, 1835, the day before it died, and noted the following symptoms: The bellows-sound in the head distinct, synchronous with the pulse; can be heard by applying my ear over any part of the head, but most distinctly when I apply it over the top or at the sides of the cranium. The sound is rather abrupt and rasp-like, not continuous. In this case the brain, on examination after death, was found to be much flattened in its convolutions, and its blood-vessels, external and internal, were highly congested. The brain was exceedingly hard and firm; it resembled soft putty in consistence, and could be handled and rolled about without being torn or even misshaped. No fluid was deposited in the ventricles, and only a very small quantity was found at the base of the organ.

I might, gentlemen, cite a number more of cases of cerebral disease (supposed to be such by the rational signs) in which the cephalic bel-

lows-sound was a prominent symptom; but as some of the patients recovered, and as no autopsy was made of those who died, I shall not tax your patience with a history of their malady. I will remark, however, in this connexion, that in a few cases which were supposed to be acute inflammatory affections of the cerebral organs, the cephalic bellows-sound appeared and disappeared two or three times during the course of the disease, and that its developement and disappearance seemed to depend on the increase and diminution of the inflammatory symptoms.

I cannot close my account of cases in which the cephalic bellows-sound was present, *without remarking, in the sixth place, that the sound has been produced by immediate pressure of the brain.* This is an interesting fact in the history of this new auscultic phenomenon; as we may derive from it some positive proof in relation to the immediate cause of the sound. I made a verbal report of this case to the Society at the time my observations were made; and I beg your attention to the case at this time. On the 24th day of June, 1834, a carpenter, while engaged in raising the frame of a church in Milton, had his skull badly fractured by the falling of a heavy iron bar upon it. The fracture was extensive, and eleven pieces of bone were removed from the wound, leaving an opening equal to one and a half inches in diameter, through which the brain was seen pulsating. In three or four days a portion of the brain protruded through the opening to the height of an inch or more above the cranium, forming a tumour of the size and shape of the large end of an egg. At this time, and while the tumour was in this condition, I applied my ear to the patient's head, and at the same time pressed the tumour with the palm of my hand, and caused it to sink back into the cranium. When the tumour was thus forcibly pressed, I heard a very distinct bellows-sound, and on taking off the pressure, the tumour would rise up again, and the bellows-sound would disappear. In fact the sound could be produced and made to disappear at will, by increasing and diminishing the pressure made upon the tumour. The sound was not developed until the tumour was pressed down nearly to the surface of the cranium. When first heard the sound was faint, soft, diffusive; but when the pressure was the greatest, and the tumour reduced almost to a level of the cranial surface, the sound was loud, short, abrupt. This experiment I performed a number of times, and with the same results. When the pressure was considerable, the patient complained of pain in the head; but the severest pressure which was made upon the tumour, did not deprive him of sensation or cause him any considerable degree of suffering. This man finally recovered from the

effects of the wound, and has returned to his native country in Europe.

I have now, gentlemen, laid before you a portion of the observations which I have collected and recorded in relation to the cephalic bellows-sound. This new auscultic symptom, which was a prominent one in the cases I have cited, is not a phenomenon of health. It cannot be detected in the heads of children or adults who are free from all disease or derangement of the bodily functions; while on the other hand, as the cases above related have shown, it has been found to accompany, 1st, *chronic hydrocephalus;* 2nd, *congestion of the cerebral organs;* 3d, *acute inflammation of the cerebral organs with serous effusion in or around them;* 4th, *abscesses in the brain;* 5th, *induration of the brain with effusion into its ventricles and at its base;* 6th, *compression of the brain.* We have then one auscultic sound in the head which is a symptom of cerebral disease; and it is possible that the cephalic sounds of the voice and deglutition, as well as that of the heart, may also have been modified or altered in the same cases. I regret I did not devote more attention to these sounds, in order to ascertain the fact. Whether any alteration in the last named normal cerebral sounds takes place or not, that which I have described under the name of cephalic bellows-sound accompanied, and was unquestionably dependent on, a pathological condition of the organs within the cranium. The whole history of the cases proves this; and we come now to a consideration of its seat and immediate cause; or in other words, to inquire, 1st, In what organ or organs did this sound originate in the instances above mentioned? 2ndly, What part of the cranium did it proceed from? and 3dly, What was the immediate or proximate cause of its production? My views in relation to these points were expressed in my first communication, and remain unchanged. In regard to the organ or organs in which the sound had its origin, it is very evident, I think, from a consideration of the symptoms in the cases which have been cited, and the circumstances attending them, that it originated and was seated *in the arteries.* For in the first place, the sound was distinct from that produced by respiration, by deglutition, or any other operation going on within the head, that we can conceive of, save arterial action. Secondly, it was synchronous with the pulsations and impulse of the heart and of the carotid and temporal arteries, and also with the rising and impulse of the brain, as observed by placing the finger upon the unclosed fontanelle. Thirdly, the sound ceased, or at any rate was rendered inaudible, by compressing the carotid arteries and arresting the circulation of the blood through them; and it became fainter and less distinct as

the patient grew weak and the arterial action feeble. Fourthly, it resembled in all respects the *bruit de soufflet* which we hear in diseases of the heart and of the arteries; and like that, it often passed into a continuous murmur, and was characterized at times by a musical tone. Fifthly, in studying the structure, distribution and functions of the organs enclosed by the cranium, we must, I think, be convinced that the arteries were the only organs which could have emitted a bellows-sound like that I have noticed.

Assuming it as proved, then, that the sound in question proceeded from the arteries, I may further observe that those situated at the base of the brain were probably the ones in which it originated. I infer this from a consideration of the peculiar distribution of the arteries within the head. Anatomy teaches us that all the arteries of any considerable size are situated at the base of the brain, and rest on unyielding bony structure. Having passed through their appropriate apertures and osseous canals, they course along upon the base of the skull and in furrows formed for them in the brain, and soon subdivide and spread themselves upon the pia-mater, and do not actually enter the substance of the brain until they become mere capillary vessels. There is, therefore, no artery entering the cerebral substance, and no one running over its surface, of sufficient calibre to render it capable of sending forth a bellows-sound as loud and audible as were those which characterized the above cases. For to produce a bellows-sound in an artery artificially, which can be readily done, I find that the artery must be of considerable size, and must rest upon or be in contact with a surface which is solid or somewhat unyielding; otherwise it will not be in a condition required for the developement of the sound. Such is the size and the situation of the arteries on which the brain rests. A still further proof that the arteries at the base of the brain were the seat of the phenomenon, is derived from the existence of the pulsatory motions of the brain which were seen and felt at the fontanelle. These motions, it is very evident, were given to the brain by the action of the arteries on which the brain rested; no other function but that of the arteries could have caused these motions. The cephalic bellows-sound always accompanied and was synchronous with the pulsatory motions of the cerebral mass; consequently it follows that the sound must have proceeded from those vessels. The facility with which it was heard at the summit of the cranium is no evidence against the validity of this conclusion; for the brain is an excellent conductor of sound, as is proved by the fact that it readily transmits the noise produced by the action of a watch which may be in contact with the side of the head opposite

hat on which the auscultator's ear is applied. If, then, the bellows-sound proceeded from the arteries at the base of the brain, its production in the cases above related, may be rationally and satisfactorily accounted for. It is now a well established fact, that the bellows-sound of the heart and of the arteries arises from an impediment to the flow of the blood through these organs. An impediment to the free passage of the blood through the large arteries which lay on the base of the skull, must, I conceive, have existed in these cases. For the brain is contained in a strong and unyielding bony case, and is itself incompressible. In all the cases in which the cephalic bellows-sound was heard, or at least in all those in which it was heard and of which an autopsic examination was made, there was fluid, congestion of blood-vessels, or a pathological state of the organs within the cranium which would, and must have, displaced the brain, and forced it against the compressible arteries on which it rested. The arteries being thus forced and pressed against the bony channels through which they coursed, their calibre must have been diminished. This condition of the arteries formed an impediment to the free passage of blood through them, and constituted the immediate or proximate cause of the cephalic bellows-sound.

This is, I believe, the true rationalé of this new auscultic symptom, the only theory by which its production can be satisfactorily accounted for. It will, moreover, enable us to account for all the variations in the intensity and tone of the sound under consideration, and also for the occurrence of many other symptoms attendant on diseases of the brain, such as the sudden screams uttered by children, spasms, noises in the head, &c., all which would naturally result from the different degrees of force with which the brain was urged against the arteries and nerves which lay beneath it.

Having now offered what I have to say at this time on the subject of the cephalic bellows-sound, I will ask your attention for a moment to one more abnormal cerebral sound, which is likewise connected with the cephalic sound of the heart. In the course of the last three years, I have noticed a modification of the normal cephalic sound of the heart in six cases of cerebral apoplexy. In each of these cases the sound of the heart, as heard at the surface of the cranium, was decidedly abnormal. Instead of its being soft, and appearing as if it proceeded from a distance, as in healthy adults, it seemed to be near the ear, and was characterized by a kind of impulse, as if the whole brain was suddenly raised up against the calvarium. So characteristic did this sound appear, I could not but believe that the brain *en masse* did actually strike against the cranium beneath my ear.

Five of the individuals in whom I noticed the phenomenon died, and an autopsic examination was made of two of them. A brief history of these two cases may not be uninteresting.

In the afternoon of the 14th day of September, 1835, Miss T., aged seventy-one years, was suddenly attacked by apoplexy, which deprived her of consciousness and of the power of motion in the right half of the body. I was with her in a few minutes after the accident, and bled her freely from the arm and prescribed other remedies. In two hours I visited her again, and found her as unconscious and as helpless as on my first visit, and exhibiting all the symptoms which usually result from a sudden and copious effusion of blood into or upon the brain. At this time I applied my ear to her head, and detected nothing resembling a bellows-sound, but I heard the action of the heart very distinctly, or rather the first beat of the heart. The sound did not appear to be at a distance, as is usual in a healthy state of the brain, but it seemed to be in the head itself, and was accompanied by an impulse which actually gave motion to the head. It seemed to me as if the brain itself was suddenly raised up against its bony case at each beat and sound of the heart. I could not separate the cephalic sound of the heart in this case from the idea of an impulse being connected with it. I therefore characterized it at the time as an impulsive sound. The patient for two days rallied a little, but soon relapsed, and finally died the fifth day after the attack. On a post-mortem examination of the head, the membranes of the brain were found to be healthy; the convolutions of the brain flattened; the brain itself of natural consistence and colour. On dissecting the brain a large deposit of partially coagulated blood was found in each hemisphere: in the right hemisphere it amounted to two ounces or more, and the cavity which contained it extended the whole length of the lateral ventricle; in the left hemisphere the blood was deposited along the ventricle, and amounted to about one ounce and a half, and had forced its way into the left lateral ventricle. No appearance of disorganization of the cerebral mass was discovered, except in the immediate vicinity of the hemorrhagic deposits, around which the brain was somewhat discoloured and softened. The arteries at the base of the skull were undergoing the process of ossification, were white, opaque, and inelastic. The carotid arteries, where they entered the cavity of the cranium, were so much ossified as to be stiff, and to break under pressure.

In the following case, the impulsive cephalic sound of the heart disappeared after copious venesection and as soon as the patient recovered from the apoplectic state; and it is this fact which renders th

case worthy of reciting. Mrs. B., aged sixty-one years, had an attack of apoplexy on the 4th of March, 1835, which felled her to the floor, paralyzed the right side, and deprived her of consciousness. In the course of a few months she had recovered almost entirely from the effects of this attack, and was able to walk and to enjoy life as usual until the 14th day of April, 1836. On rising from her bed on that morning, she experienced another attack of apoplexy, which affected her as before, except that it did not deprive her of consciousness. I saw her in ten minutes after the attack, and on auscultating her head, I noticed a strong impulsive sound accompanying the action of the heart, as if the brain was suddenly propelled up against the cranium beneath my ear. The sound appeared to be near my ear, and resembled almost exactly the sound which I caused by snapping forcibly with the finger nail my cheek when powerfully distended with air. I bled this patient freely, and ordered ice-water to be applied over her head. In three hours I visited her again, and was gratified to find that she had recovered so much as to be able to speak and to move her limbs. On applying my ear to her head at this time, I could hear nothing of the impulsive sound which I had before noticed. I could detect the cephalic sound of the heart, but it had nothing of the impulsive character, and seemed to be at a distance, instead of being immediately beneath my ear. In twelve hours after the attack my patient could speak and use her limbs nearly as well as she could previously to the accident. She, however, began to lose her strength in the course of the year, and continued to fail both in body and mind until the 4th day of September, 1837, when she died. An examination of the head was made the next day. The brain was found to be rather soft than otherwise. No alteration was found in the substance of the brain, except in the left optic thalamus; this body was much shrunken, and in it was discovered the remains of an hemorrhagic effusion. The cavity in which the blood had been deposited was small, irregular in form, and of a dull yellow colour, and was entirely empty.

I might cite one other case of cerebral apoplexy in which the impulsive sound was heard at the time of the attack, and which disappeared as the patient recovered from it; but I will not consume your time by describing it. My object has been gained by announcing the discovery of this abnormal sound, and by introducing it to your notice. The sound, I am aware, will not be easily detected and recognised by one who has had no experience in cerebral auscultation; but having made himself familiar with the normal cephalic sounds, and particularly with the cephalic sound of the heart, the auscultator will meet

with little or no difficulty in distinguishing the impulsive sound under consideration, when he auscultates the heads of those labouring under cerebral apoplexy. I have heard it in every case of the affection in which I have practised cerebral auscultation, and from this fact I am strongly inclined to believe that it is a constant symptom of the disease.

Indeed, when we consider the condition of the brain and of the arteries at its base, resulting from an extensive effusion of blood within the cranium, we may readily conceive that such a symptom would necessarily be developed. The moment such an effusion occurs, the brain is suddenly pressed down upon the arteries on which it rests, and also against every point of its bony case. It cannot then, for want of room, rise and fall with the pulsations of the arteries at its base, as it does in its natural condition; and this being the case, the mass of blood thrown from the heart at each contraction of its left ventricle, would strike with great force against the compressed parts of the arteries, and communicate a shock to the brain which would be transmitted to, and be heard as an impulsive sound at, the surface of the cranium.

With these observations I conclude for the present my remarks on cerebral auscultation. The facts which I have submitted to your notice are of a character hitherto unobserved. They must be regarded as highly important, as they cannot fail to lead to a new method of investigation of cerebral diseases.

Boston, April, 1838.

Art. II. *On some Mechanical Functions of Areolar Tissues.* By John W. Draper, M. D., Professor of Chemistry and Physiology in Hampden Sydney College, Virginia.

1. It is the object of this communication, to offer some proofs that the peculiar force known to chemists and physiologists under the title of endosmose and exosmose, has no existence; and that all the cases described as chemical decompositions, brought about by the intervention of animal membranes and areolar tissues, are only deceptive examples of the play of ordinary and well known agents.

2. It is necessary, before entering into a critical examination of these points, to explain briefly the leading experiments which have been reported in connexion with the subject. Often received upon doubtful evidence, and sometimes implying the existence of laws,

which, if established, would compel us to modify our opinions of chemical agency in general, it is time that the whole of them should pass under a connected review, their bearings upon each other be properly designated, and the true value which ought to be attached to them ascertained. If thus examined, it will be found that they are very far from establishing the points supposed; and in compliance with the usages of science, their application must be rejected.

3. We shall have to consider, 1st, those experiments which refer to changes of hydrostatic level of liquids, and the production of mechanical results; 2ndly, those which are reputed to be examples of chemical decompositions brought about by tissue action.

4. The original experiments of Porrett, Fischer, and Dutrochet, are instances of the first class; from them the terms endosmose and exosmose are derived. They are essentially illustrations of the fact, that if two fluids be separated from one another by a porous barrier, they will mutually traverse it, but very often not with equal velocities, for the volume of the one passing in a given time may exceed the volume of the other, and hence a disturbance of their hydrostatic level results. If, for example, we take a tube, and close one of its ends with a piece of bladder, securely tied on, and fill it to a certain mark with alcohol, and then place it in a vessel of water, taking care that the hydrostatic level inside the tube and that on the outside shall coincide, in the course of a few hours it will be found that this equilibrium has been entirely disturbed, and the level of the alcohol risen. On reversing the arrangement, and placing the water in the tube, and alcohol on the outside, there will be at the completion of the experiment a similar disturbance, but now the level will be found to have fallen.

"(*a*) In this way it was found that there was endosmose from water to gum water, to acetic acid, to nitric acid, and especially to hydrochloric acid; but that there was not endosmose from a liquid to itself.

"(*b*) And that different animal and vegetable membranes enjoyed the same properties as bladder, in different degrees, and that plates of burnt earth, or calcined slate, or clay, and in general all aluminous substances, possessed analogous powers, though to a much less extent.

"(*c*) To explain these phenomena, it is necessary to resort to some force different from ordinary capillary attraction, or at least to some new modification of it; for the forces of capillarity, such as they are now understood, are totally insufficient to produce these results." (*Pouillet.*)

5. The second class of experiments, though often affording well marked illustrations of change of hydrostatic level, is chiefly impor-

tant from the instances of apparent decomposition exhibited. From these it has been inferred, not only that membranes possessed certain definite chemical powers, but that at times they gave proof of a predilection for the passage of certain bodies in determinate directions through them.

(*a*) If litmus water be placed on one side of a piece of bladder, and alcohol on the other, the water will forsake the colouring matter to pass through the bladder and unite with the alcohol.

(*b*) If ferrocyanate of potassa be tied up in a section of intestine, and immersed in a solution of protosulphate of iron, Prussian blue will be deposited on one side of the intestine, but not on the other; hence it is inferred that one solution is suffered to pass through the pores, but a like passage is denied to the other.

(*c*) If a solution of oxalic acid be placed on one side of a membrane, and lime water on the other, clouds of the insoluble oxalate of lime will form on the side of the lime water, but the other side will be pellucid.

(*d*) If a volume of nitrogen gas, in a soap bubble, or under any suitable membrane, be exposed to atmospheric air, decomposition of that air will result, its oxygen passing through the membrane to form atmospheric air with the nitrogen within.

(*e*) If a quantity of commercial alcohol be tied up in a bladder and freely exposed to the air, the water in union with that alcohol will pass through the pores of the bladder, and gradually evaporating away, will leave the alcohol much stronger.

(*f*) And lastly, which is by far the most remarkable of these phenomena, if a tube whose extremity is closed with membrane, be filled to a certain height with distilled water, and there be placed in it a few iron nails, on adjusting it hydrostatically, and suffering it to remain for a time in a solution of sulphate of copper, the membrane will apparently decompose the solution of the metallic salt, the base of which in a deoxydized state will remain attached to the under side of the membrane, but the acid and oxygen will traverse it, and be removed by uniting with the iron.

6. The body of evidence here furnished would go to show, that membranes possess remarkable habitudes with respect to liquids, and accordingly it has been brought forward as the foundation of many physiological hypotheses. Nay more, from hence it has been assumed that these were in truth nothing more than manifestations of that principle of vitality which is supposed to be the result of organization. A power, known under the name of endosmose, distinct from all other known agents, has been created, its especial office being to bring about

certain molecular changes, in a way resembling outwardly, but essentially differing from, those of chemical affinity.

7. The error of this position might readily have been detected. We surely should not regard that as a specific force of vitality, which is possessed by inorganic matter; yet, in the outset of the original experiments on the subject, it was found that alumina exhibited the same action as bladder, though in a feebler degree. As to the amount of force, with that we have nothing to do; for no matter in how small a degree soever it may be that alumina possesses this character, the mere fact of possessing it at all, goes to show that it is not a consequence of organization, or an evidence that the substance exhibiting it has ever been moulded by the powers of life.

8. The verification of Dutrochet's experiment with alumina, becomes, therefore, a matter of the greatest importance; its extension to other inorganic substances would decide the point, and separate at once the power by which infiltrations take place, from the powers of vitality. It has, however, been stated, that those minerals in which this property has been observed, possess it in a low degree. Some chemists have extended this observation, and class with alumina other bodies of a porous texture, as certain varieties of slate. But many experiments that have been made on this point have led to erroneous results, through inattention to the conditions of hydrostatic equilibrium. If two fluids be placed in the opposite arms of an inverted syphon, they will have a common level only when their specific gravity coincides; and under all other circumstances, the height of their columns will be inversely proportional to their specific gravity respectively. If then we take a tube, and make its extremity end in a fine capillary termination, or close it with a plug of wood or of stucco, and fill it with some dense solution, such as chloride of sodium, sulphate of potash, or sulphate of copper, and then immerse it to the *same* level in pure water, the level of the fluid in the tube will descend, in obedience to the laws of hydrostatics, and when a position of equilibrium is gained, the heights of the fluid inside and outside of the tube will be inversely proportional to their specific gravities. In all this, endosmosis or capillary attraction has no concern.

9. In structures whose pores are of such a diameter that these adjustments of level can freely take place, the mechanical phenomena of endosmose are not visible; there is no fact that can indicate what is the true action of the porous body. All bodies which exhibit these phenomena, have their pores of such a size, that whilst they offer resistance to change of level by mere leakage, they allow indefinitely

small columns of the fluid they are exposed to, to interchange through them.

10. We are not to expect that any of the phenomena of molecular infiltration will be exhibited, when the apertures through which transudation occurs are of considerable size. If a piece of coarse linen is made use of as the separator of two fluids, those fluids will commingle without any disturbance of hydrostatic level. Whenever this latter equilibrium can be effected, it takes place, and entirely masks the molecular action of the mass. For this reason most minerals fail to show the change of level when water passes into alcohol. They do not possess the exact kind of porosity required, either having their interstices of so large a size that derangements of level can be quickly compensated, or on the other hand, being totally impervious to the liquids. I found that the common white earthenware, when its glaze was removed, allowed water to percolate through it to gum water, but no disturbance of level was observed, simply because the freedom of communication between the two liquids was so great, that if one of them had a higher level than the other purposely given to it, it soon returned to its original position of equilibrium. A fragment of thick Hessian crucible gave the same result, as also several varieties of slate, iron slate, and mica slate, some of which were calcined and others in their ordinary condition; also a fragment of common writing slate, which had undergone semivitrification in the forge. This freedom of communication was noticed in some specimens of soapstone, both burnt and unburnt; and whilst in plaster of Paris the experiment failed because the apertures were too large, in the transparent micas it failed for want of communication. To show, therefore, the original experiment of Dutrochet, the interstices of the barrier must be of such a diameter, that all mechanical compensations for change of level are hindered, and free molecular infiltration can take place.

11. If a tube half an inch in diameter, and three or four inches long, be sealed at one end, and whilst the glass is yet warm, be dipped into water, a number of small cracks will be made in its bottom. This forms a very useful instrument for studying the properties here under discussion. If it be filled to a certain mark with alcohol, and then plunged to the same level in water, an apparent endosmosis through the cracks is the result, for the alcohol rises with considerable velocity in the tube. It is, however, only an apparent endosmosis, for upon closer examination it will be found that the motion stops when the hydrostatic equilibrium is adjusted through the chink (sect. 8). Any of the very porous minerals show the same thing.

12. If in the last experiment the tube be filled with lime water,

and then immersed to the same level in a solution of oxalic acid, the appearance described in 5. c. will be reproduced. This cautions us not to impute to membranes any predilection for passage in certain directions; for that may arise from extraneous circumstances, and in the instance referred to, as will presently be shown, originates in a very different cause.

13. The relation existing between solids and fluids which determines their descent or rise in capillary tubes, has been referred to heretofore in these papers. (Journal, Feb. 1838.) A connexion of the phenomena of endosmosis and capillary attraction might have been traced to the fact, that no liquid will pass through a barrier the surface of the pores of which it cannot wet. The relation of glass and quicksilver to each other in this point of view is interesting. When a piece of glass is laid upon the surface of this fluid metal, contact between them does not take place, but they are separated from each other by an exceedingly small interval. As I had failed in reproducing many of the results attempted, by means of artificial chinks in glass (sect. 11), because of their magnitude, I was led to hope that better success would attend the same attempts, by making use of the small interstice between glass and mercury. A tube half an inch in diameter was therefore taken, and one of its extremities having been ground truly flat, had its roughness taken off by exposing it carefully to the blowpipe flame. When the tube was lowered, with this extremity downwards, on the surface of some pure mercury, all the parts of its circumference touched the metal at once. A solution of green vitriol was placed in it to a certain height, and upon the mercury, on the outside of it, was poured a solution of ferrocyanate of potassa. It was expected that through the chink between the mercury and the glass, the liquids would slowly infiltrate to each other. After several days no such action was observed, and the experiment, though repeated under a variety of conditions, afforded no better result. Now water and saline solutions, as will hereafter be shown, pass through interstices much more minute than this can reasonably be supposed to be; it is evident, therefore, that the want of action is mainly due to the circumstance that water and saline solutions generally do not wet mercury, and the laws of capillary action would indicate, that under these circumstances, they would fail to pass through the chink.

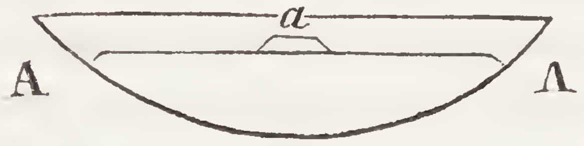
14. The event of this experiment points out in an impressive manner the general relation that must exist between the solids and liquids of organized bodies. Water will pass with great rapidity through a chink the width of which is not more than the half of a millionth part of an inch, provided it can wet both sides of that chink; but if this

condition be not fulfilled, it fails to pass, even though the width should increase to upwards of one hundred and forty-four times its former dimensions.

15. That the non-passage described is here referred to the true cause, will appear from the following experiments. As has been stated, under ordinary circumstances, water does not wet the surface of pure quicksilver, but stands upon it in drops of a more or less rounded form: if, however, the electrical relations of these substances be changed—if the mercury be in contact with the negative pole of a voltaic battery, and the water with the positive, a remarkable phenomenon ensues—the water now wets the mercury. To this important fact, and its applications, I shall hereafter return.

16. The best method of showing that the voltaic battery has entire control over capillary attraction, is to take a shallow vessel, containing a quantity of mercury, as AA, fig. 1, and place upon it in the position marked *a*, a drop of water; on making this drop communicate with the positive electrode of a battery, and the mercury with the negative, in a moment the drop loses its rounded form, and spreads out in a thin sheet on the metallic surface, completely wetting it, and according as the tension of the battery increases, the drop expands more and more. Thus, if the current from 5, 10, 20, 40, 80, &c. plates, be successively passed through it, the diameter of the circular space it occupies closely follows the increase, and appears to continue to do so until the drop becomes so thin that the electricity in the shape of a spark can pass through: then, of course, the experiment cannot be continued.

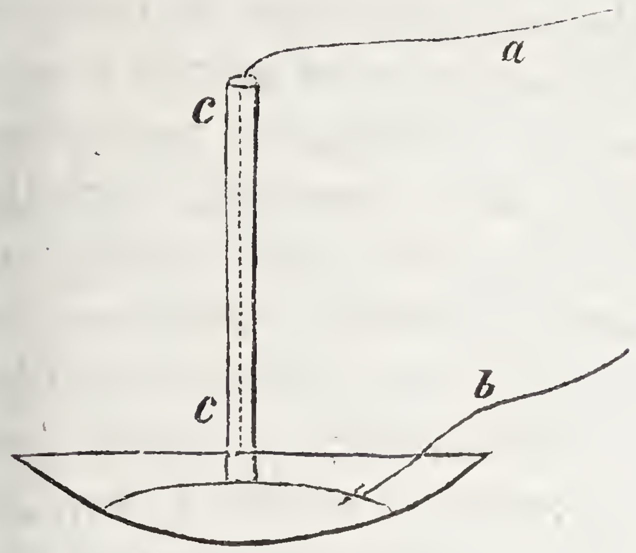
Fig. 1.



17. If, therefore, in the arrangement of sect. 13, the electrical relations of the saline solution and the mercury be changed, by the process here indicated, we should expect that the passage through the chink would take place; and it is so. This experiment affords a very elegant illustration of a result obtained by Porrett many years ago, which was applied by Dutrochet to the explanation of endosmose. He observed that if two quantities of water were separated from each other by a membranous partition, and one of them made positive and the other negative, all the water in contact with the positive pole would escape through the membrane into this negative partition. When in the arrangement of sect. 13, the water escapes through the chink on being electrified, it does not move solely by the action of its own weight, but is also impelled downward, in the way described by Porrett. For, take a tube, *cc*, fig. 2, whose diameter is about one-tenth or one-twelfth of an inch, and insert in its axis a platina wire, *a*,

then let the lower extremity touch a surface of water, and a volume of that fluid will rise in it to a certain height, by common capillary attraction. If, now, the tube, charged with its water and wire, be placed, as in the margin, on the surface of some mercury in a watch-glass, so that the extremity of the tube shall just touch the metallic surface, and the wire *a* be then connected with the positive electrode, and the wire *b* with the negative, in an instant the water will begin to flow out of the tube, and spread over the mercury, and will continue to do so until its level has sunk to the end of the platinum wire. With a wider tube, such as that described in sect. 13, this passage might be imputed to the mere gravitation of the parts of the fluid, urging them downwards; but, in this instance, owing to the narrowness of the tube, that force is nullified by capillary attraction. The water is therefore driven out of the tube by an active force; and that this is really the case, is abundantly proved by breaking the battery connexion, and raising the tube slightly above the mercurial surface: the water then precipitately returns back into the tube again.*

Fig. 2.



18. In a paper published in this Journal, "On the Physical Action of Capillary Systems," it was shown how the common phenomena of capillary attraction originate in electrical excitement. The fact that electricity has therefore an entire control over the motions of fluids in capillary tubes, will not be at all surprising. This leads us to a generic resemblance between the phenomena of chemical affinity and those of capillarity, which deserves a much more detailed investigation. Treatises on chemistry represent a number of disturbing agencies which frequently antagonize, and often control the operations of affinity; these are cohesion, elasticity, quantity of matter, gravity, and the agency of the imponderables. It is, however, a mistake to enumerate either quantity of matter or gravity as ever disturbing the action of affinity. Gravity, it is true, may cause the lower parts of a solu-

* Of all the interesting galvanic experiments that have been described by chemists, there are perhaps few more important than these would be if properly extended. Magnetism has become a branch of electro-dynamics. Capillary attraction will unquestionably prove to be a branch of electro-statics. The developement of all these facts is essential to the progress of physiology. We know that voltaic currents pass along some systems of nerves, and strangely control the capillary operations of tissues and glands.

tion or an alloy to be denser than the upper; but an action of this kind is not to be accounted as an example of contrariety in the forces. It does not exhibit them at all at variance with each other, or in any manner neutralizing each other. Similar remarks might be made in respect to quantity of matter. The elastic state, being merely a condition of cohesion, influences the action of affinity, by presenting bodies under a modified form as respects their cohesion. Strictly speaking, there are but two forces which in reality control affinity; these are cohesion and the agency of the imponderables. And these are the forces that control capillary action, the phenomena of which are the results of the equilibrium of an attractive force on the one hand, and cohesion on the other. They may be regarded as modified cases of chemical affinity, and being brought about by the operation of the same forces, are under the control of the same disturbing agents.

19. In section 10, I have enumerated different cases of ineffectual attempts to recognise the action of endosmosis in inorganic bodies. I have also shown the peculiar disturbance that arises when interstitial communication is too free, and the relation that must exist between a solid and a fluid for molecular transudation to happen. Now, when all these conditions are fulfilled in any barrier, the phenomena of endosmosis will take place, irrespective of its nature, whether it be organic or inorganic. Plates of kaolin or porcelain clay from Villarica, disks of steatite from Brazil, after undergoing induration in the fire, and a variety of compact sandstone, being cemented on the end of a tube, exhibited in a very satisfactory manner the passage of water into gum water, even against hydrostatic pressures of several inches. Independent of this decisive evidence, it might be determined that an organized tissue is not essential to this process, from the circumstance that common writing paper, fastened with sealing wax on the end of an open tube, exhibits the endosmosis of water into gum water in a much more striking manner than bladder; and certain inspissated juices of plants, as caoutchouc, when in thin layers, act very well, though not so rapidly. Of all substances hitherto tried, filtering paper imbued with coagulated albumen acts most satisfactorily.

20. A repetition of these experiments, made under a variety of circumstances, leaves no further doubt as to the true character of Dutrochet's endosmosis. It is not, as some would have us suppose, a vital, or a semi-vital force; it is nothing more than a peculiar case of capillary action.

21. The conditions which this peculiar case requires, are that both the fluids shall be able to wet the barrier, that in a capillary tube formed of it they should rise to different heights, and that they should

be able to unite chemically with each other. If we suppose a tube of such a length, with respect to its diameter, that a fluid in which it is immersed shall rise to the top of it, and that some extraneous cause shall effect its removal as fast as it reaches that position, it is evident that a continuous current will traverse the tube. A case in point is the action of the wick of a lamp, along which the oil continually ascends, because it is removed by chemical decomposition as fast as it reaches the highest point of the capillary system of cotton fibres. Any other cause which would effect its removal in as complete a manner, would equally produce a continuous current. The same explanation applies in the case of water passing through a tissue of bladder to alcohol; for as soon as the small columns which percolate through that tissue meet with the alcohol, they are removed by uniting chemically with it, and a continuous current therefore results. The current of alcohol that takes place in the opposite way, meets with a similar fate; and the excess of one of these currents over the other, determines in what direction the hydrostatic level shall change. Even the reputed decompositions brought about by endosmosis are not without very homely and well known analogues. The greasy wick, when dipped into a lamp containing oil and water, removes the former without disturbing the latter.

22. It has been shown, that to exhibit the phenomena of endosmosis, pores of a certain size are necessary; that if their diameter exceed this, the mere leakage masks every other effect. We might next proceed to investigate what are the actual dimensions demanded. This inquiry is not alone one of mere curiosity, but meets with important applications in every department of physiology; and the problem if successfully solved, would cast a great deal of light on the interstitial communications that take place in every part of organic structure. Vessels of an excessive degree of minuteness creep through the finest tissues, which might almost be regarded as formed by the interlacings of these narrow capillary tubes. The immediate apertures of communication between the remote fibrils of the artery, the vein, and the duct of any gland, are of an indescribable smallness. Yet, how great a share of the aggregate of the actions of life is carried on in such little pores, which are too small for the injection of the anatomist to reach, or even for microscopic vision to descry.

23. These pores are, however, capable of approximative admeasurement; or, at least, their dimensions may be determined within limits of error. The method by which this can be accomplished, essentially depends on the circumstance, that if any fluid will *wet* two or more solids, it will rise in capillary pipes formed of them identically to the

same height, no matter what their chemical constitution may be, provided their diameter is the same. Thus, water will rise in a tube of glass, of serous membrane, or in a straw, to the same height, if the diameters be alike.

24. It has been stated (14) that water will pass into a chink the width of which is not more than the half of a millionth part of an inch, under the condition that it can wet both faces of the chink. Sir I. Newton has shewn (Optics, Book II., Part 1,) that if you lay a convex lens of long focus on a glass plane, a series of coloured rings surrounding a central black spot will emerge; and it is known from simple geometrical principles, that the greatest distance between the two glasses, in any part where the black spot appears, does not exceed the half of a millionth part of an inch. Yet, if a drop of water be placed between the glasses, it will be perceived to make its way rapidly to the central spot, certain optical changes, depending on its superior refractive power as compared with atmospheric air, accompanying its progress; and hence we infer, that if a chink or cleft, not exceeding the half of a millionth of an inch, occurred in an animal tissue, water would find its way into it.

25. In vessels of large diameter, fluids readily adjust themselves hydrostatically, and currents set in any direction without obstruction. When the dimensions of the containing vessels become very small, a new order of things is set up, and the particles have, as it were, to obey newly created forces. In large masses, the action of gravity produces the leading phenomena, and the effects of all the molecular forces vanish. When minute quantities are operated on, the action of gravity diminishes, and friction, cohesion, capillary action, and other molecular forces, become obvious. The mechanical relations, therefore, of small and large quantities, are totally distinct; hydrostatic equilibrium, which is effected so readily in larger vessels, is accomplished with more difficulty through pores, and as these decrease in their dimensions, the forces of resistance rapidly increase. Water, at all pressures, will adjust itself hydrostatically with great readiness, when it is obstructed by a porous medium, provided the pores are of sensible size, but if that size diminishes the resisting forces continually increasing, the conditions of hydrostatic equilibrium are fulfilled with more difficulty, and at last cease to be fulfilled at all.

26. The foregoing remarks enable us to come to a decision in reference to the character of endosmosis, as indicated in section 4. We perceive that this force, far from being the attribute of organized matter, exhibits its phenomena when substances whose inorganic character is unquestionable, are made use of. A variety of porous minerals

may be employed in lieu of organic tissues with success, and if the endosmosis of gases be allowed to be a phenomenon of the same kind, then we know that such liquids as water, may be employed as barriers; a peculiar degree of porosity is required, a structure, dense enough to obstruct readily hydraulic currents, but open enough to allow very small columns of fluid material to traverse it. A crack in glass, because of its width, allows too great a freedom of motion; but bladder, peritoneum, or condensed cellular tissue, fulfil, at ordinary pressures, the required condition. It is necessary, too, that the liquids under trial shall wet the surface of the solid; for want of this action, water fails to pass through the narrow interstice, between mercury and glass. The degree of pressure, generated either during the action, or existing at the commencement of the experiment, is an important element, for upon it depends the appearance or non-appearance of the phenomenon. Thus, at ordinary pressures, bladder will exhibit the change of level, when water passes into alcohol; but if pressure on one side of the membrane be increased, a hydraulic current sets through it, and the experiment fails, because the success of the result depends on the excess of the molecular over the hydraulic current; and in this case the latter predominates. The relation which the liquids bear to each other is also important, the facility with which they unite with each other, and therefore remove each other on transuding through the barrier, may sometimes make up for an increased size of the pores.

27. There is no absolute diameter, at which a pore will cease to permit a hydraulic current to pass it, and the phenomena of endosmosis to commence. Size is but one of the elements involved in producing this action, and deviation in respect of it may be often compensated by variations in the other conditions; its relation to pressure is not unimportant. Water has been forced through the interstices of gold, and melted tin through the pores of solid copper.

28. We have next to consider the different cases of decomposition, ostensibly brought about by endosmosis.

Section 5, (*a.*)—If litmus water be placed on one side of a piece of bladder, and alcohol on the other, the water will forsake the colouring matter, to pass through the bladder, and unite with the alcohol! This experiment was originally reported by me in a former number of this journal, as explanatory of the fact, that colouring matter in the intestines could not give its peculiar tint to the chyle, doing away with one of the most important objections, to the direct absorption of medicaments by the lacteal system. In estimating its true value among the facts now under consideration, we shall find that it is very

far from supporting the hypothesis, that chemical decompositions can be brought about by endosmosis. There is no proof that the colouring matter, though permanently suspended in the water, is chemically united with it; analogies would lead us to the very opposite opinion. All that can be predicated of this experiment is, that it exhibits a refined kind of filtration, which, probably, may hereafter become of considerable importance, in its applications in the arts; as in the separation of colouring matter from solutions, or the preparation of medicines, such as the vegetable alkalies, which should be formed from colourless solutions. It is probable that the non-solubility of litmus in alcohol, is not without its influence in this matter.

29. The results referred to in section 5, *b*, *c*, *d*, may all be classed together. They have been taken as proving that currents may set in determinate directions through a membrane; thus it has been inferred from the experiment (*c*), that when a solution of oxalic acid is on one side of a membrane, and lime water on the other, the acid passes freely through the pores, but a passage to the lime water is denied. It has been thought, that an action of this kind was the result of organization; an important property, possessed by membranes only; hence it has been inferred, that tissues allowed of the transit of bodies in certain directions through them.

30. A more careful investigation of the circumstances deprives this phenomenon of all its mysterious importance. It is by no means confined to tissues, or organized matter (Section 12). If we take a cupping-glass, the edge of which is truly ground, and having filled it with lime water place it upon a piece of clean plate glass, then on pouring a solution of oxalic acid on the plate, so that it may encircle the edge of the cupping glass, it will be perceived, that whilst the acid solution on the outside remains clear and colourless, innumerable streams of oxalate of lime pass from the bottom of the glass, and rising in white clouds, render the solution turbid. Here surely we cannot ascribe any organic function to the chink between the two pieces of glass, yet, the current apparently sets only in one way, and exhibits to all intents and purposes, a phenomenon identically the same with that referred to in section (5).

31. The instances referred to in that section, are those which have hitherto attracted attention. Some physicians have made important but unwarrantable deductions from them. Sacs, formed of animal tissues, have been supposed to be competent to expel saline matters from them by exosmose, whilst they were introducing water by endosmose. No general rule of this kind will apply, nor will the hypothesis, that a current passes in one direction only, bear the test of a

close examination. It has been stated, that when oxalic acid and lime water are separated from each other by a membrane, a precipitate of oxalate of lime takes place on the side of the lime water, and therefore the current sets from the acid to the lime water, but none in the opposite direction. The same occurs in the case of Prussian blue, which is always found on one side of the membrane. The action is correctly reported, but the inference is erroneous.

32. I took a number of tubes, open at both ends, and tied a piece of bladder on each. They served to contain a fluid which might communicate with one of a different kind, capable of giving a precipitate contained in a glass receiver.

a Contained sulphocyanate of potassa in the tube, and solution of persulphate of iron in the reservoir.

b Contained solution of iodide of potassum in the tube, and solution of bichloride of mercury in the reservoir.

c Contained solution of oxalic acid in the tube, and lime water in the reservoir.

d Contained solution of chloride of barium in the tube, and dilute sulphuric acid in the reservoir.

e Contained prussiate of potassa in the tube, and persulphate of iron in the reservoir.

f Contained prussiate of potassa in the tube, and protosulphate of iron in the reservoir.

g Contained bichromate of potassa in the tube, and acetate of lead in the reservoir.

h Contained dilute muriatic acid in the tube, and solution of nitrate of silver in the reservoir.

i Contained solution of prussiate of potassa in the tube, and sulphate of copper in the reservoir.

In the course of a few days, it was found, that in the arrangement marked *a*, *c*, *d*, *f*, the level within the tube had risen, and the deposit of sulphocyanate of iron, oxalate of lime, sulphate of baryta, and Prussian blue, had taken place within the tube; in the arrangements *b* and *g*, the precipitates of biniodide of mercury, and chromate of lead, were entirely interstitial, the pores and cellular tissue of the membrane being choked with them, but none had escaped into the fluids on either side of the barrier; the membranes, when thus injected, formed very pretty microscopical objects; the level in the tube *b* had risen, but that in *g* had fallen. In the arrangements *e* and *h*, the level in the tube had risen, but the deposit was found on the outside. In *i*, after several days, no action of any kind could be perceived, due perhaps to the unusual thickness of the membrane.

33. From the aggregate of these experiments, we gather, that in nearly all cases where two fluids, which, being mixed, give rise to an insoluble precipitate, are separated from each other by a membrane, the precipitate will be found on one or other of the sides of that membrane, but hardly ever on both; sometimes the action appears to be checked by the choking of the pores and interstices, and then little or no deposit is found on either side of the tissue.

34. In giving an explanation of these curious facts, it is to be borne in mind, that all the phenomena treated of in this paper, are the results of two contemporaneous currents, endosmosis never existing without exosmose. If these currents are established in fluids, which, by their union, give rise to solid matter, its deposit may occur under all the forms designated in section 32, 33. If, for instance, the precipitate be a light material, and one of the currents exceed the other in volume, the small particles, as they are formed, are drifted by the current, which is acting under the greater advantage, and the deposit will take place wholly on one side. This, I suppose, is the mode of deposit of oxalate of lime, which always goes with the greater current. The chemical change, or union, it is to be remembered, takes place at the point of contact of the two fluids, which is necessarily in the membrane itself; there they neutralize one another, and if the circumstances of the experiment permit, the more powerful current carries before it the precipitating particles as fast as they form, and the excess of unneutralized material in it produces a precipitate of the same kind as soon as it mingles with the mass of fluid on the side of the membrane toward which it is going. But, if any disturbing causes intervene, if the precipitated matter has any affinity for the fibre of the membrane, in the manner of a dye, or if it be too bulky to pass through the pores, or too ponderous for the current readily to move, it is detained on the spot where it was generated, and in a very short time the tissue becomes choked; the biniodide of mercury is subject to these circumstances. A number of disturbing causes will often change the results of these experiments, when, for example, the precipitating particles have a high density, their weight may carry them in a direction, even opposed to the stronger current. The relative specific gravity of the two fluids, may also determine the course in which the particles shall go.

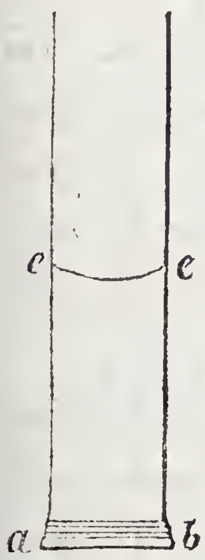
35. That these experiments do not prove that membranes have a predilection for passage in certain directions through them, the results of the earlier writers are sufficient to show. Drs. Jackson, Valk, and Staples, have shown that when Prussian blue is deposited in this way, sometimes the precipitate is toward the salt of iron, and some-

times toward the prussiate of potash, the direction it takes being often influenced by very slight causes. Nay, even analogous action may be exhibited, without using any membrane, barrier, or obstruction; if, into a half ounce phial, a quantity of strong sulphuric acid is poured, and upon that a solution of chloride of calcium, so that the two fluids may intermix as little as possible, in the course of a few days it will be seen, that as the fluids slowly diffuse into each other, the sulphate of lime is deposited entirely in the supernatant solution, and none in the strong acid, a result unquestionably depending upon their relative specific gravity and cohesion.

36. Section 5 (*d*) (*e*) contains examples of what has been termed in these papers, decompositions of a certain sort. In relation to the first of these, it is by no means clearly proved that oxygen really does leave the nitrogen in the atmosphere to go through the barrier. The two gases may respectively pass into each other, as atmospheric air and nitrogen. It is true, that the more probable mode of passage is that assumed in the section quoted. If so, it does not even follow that a real chemical decomposition happens, for there is much reason to doubt whether atmospheric air is itself a compound. The same observation applies, to a certain extent, to the result (*e*), which is an effect analogous to that produced by a few fibres of greasy cotton when dipped into a mixture of oil and water, as in a common lamp: effects which are totally distinct from chemical decomposition.

37. The experiment referred to in sect. 5, (*f*,) is apparently the most important of these cases of tissue action. (Journal, Aug. 1836.) A tube, of suitable dimensions, having one of its extremities closed with a piece of bladder *a b*, fig. 3, and filled to a certain height *e e*, with pure water, into which a few iron nails were dropped, was immersed in a solution of sulphate of copper. In the course of a few days, a deposit of metallic copper was found on the surface of the membrane toward *c*, but none on the inner side, or upon the iron nails. A number of other metallic salts, such as acetate of lead, nitrate of silver, &c., afford similar results.

Fig. 3.



38. Certainly this is a remarkable phenomenon, if the conditions under which it occurs are accurately detailed. The operation and laws of chemical affinity would lead us to ascribe the decomposition of sulphate of copper to the action of the iron; but then it would appear, that those same laws require the metallic precipitate to be deposited on the disturbing metal; here, however, it is found that the deposit really occurs on the membranous tissue. "From what we see, then, to attend the normal action of a

membrane, the precipitation of a metal externally, and the formation of a salt in solution on the inside, containing the same acid before in combination with that metal, we can hardly resist the conviction that the acid is liberated on the outside, passing through in its insulated state. To suppose that the sulphate of copper is transmitted undecomposed, seems to require that the copper should be precipitated on the inner side, which is not the case; and to conceive, that after being abandoned by the acid, it can retrace its way through the membrane, is to imagine a power in the structure more wonderful and incomprehensible than any thing yet presented, for it implies a transmission of a body in a state in which it is to be considered to be undissolved. An equal difficulty attends the notion that the iron, in any condition, travels to the acid, to precipitate the copper, and returns as sulphate of iron. Were the membrane clogged with the metallic deposit throughout its substance, the idea of a passage of metallic matter might receive some support; but there is no interstitial deposit; the mass of copper, on the contrary, is readily detached in one single piece from the surface of the membrane, without either rupture or injury, so that it can again be employed in fresh precipitations. Very different results from those here detailed, present themselves when bodies of the structure denominated porous are employed. Thus, substituting a stucco plug in place of a membrane, we find the whole of the deposit to occur on the inside, and none at all on the exterior surface, indicating ordinary capillary action." (See this Journal for August, 1836, p. 277.)

39. The results just described, I witnessed when they were exhibited to the Academy of Natural Sciences, Philadelphia, by Dr. Rogers, in the spring of 1836. Not coinciding with the prevailing opinion, that the decomposition was effected by the membrane, I at the time thought that the experiment gave tokens of the exertion of chemical affinities, and the production of chemical results, by the agency of bodies *at a distance;* for it appeared unreasonable to suppose that the bladder could disunite the elements of a metallic salt, under any circumstances.

40. Accordingly, experiments were made to discover if, when all the conditions apparently required were fulfilled, a piece of iron could effect the decomposition of sulphate of copper at a distance. It need hardly be added, that these trials indicated the impossibility of such an action; and it was therefore evident, that there was some error of observation about the original result. On repeating it, this suspicion was confirmed, and the true cause of the phenomenon disclosed. The course of trial followed is here indicated.

(*a*) On placing on one side of a membrane, pure water, and on the other, sulphate of copper, or any other salt reputed to be capable of decomposition under the circumstances given, no chemical action whatever occurred, in many days, at all analogous to the phenomena; but the water passed out of the tube into the copper solution with considerable rapidity.

(*b*) On repeating the experiment as given in 37, in the course of six days the results were as follows:—A great disturbance of hydrostatic level had occurred, there being an accumulation in the tube containing the iron nails; the under side of the bladder was coated to a considerable thickness with bright metallic copper, and a small portion, in a pulverulent form, was found on the inner edge, and here and there patches were discovered coating the surface of the iron nails, and minute veins of copper passing through the bladder. In many repetitions of this, the same results were uniformly observed.

(*c*) These numerous experiments showed that in all cases there was a perfect metallic communication from the iron nails, by means of veins of copper, through the bladder, with the cupreous mass on the under side. A piece of zinc *z*, was therefore suspended in the tube *a a*, fig. 4, in pure water, at a distance of three quarters of an inch above the bladder, and the arrangement exposed to a solution of acetate of lead. For several hours no chemical action whatever occurred, the water exosmosing toward the metallic solution, and the level in the tube, of course, falling. At the same time, a small portion of solution of acetate of lead passed into the pure water, as was shown after the lapse of twenty hours, by the formation of some thin filaments of lead on the lower edge of the zinc: these kept increasing in length, and finally reached the bladder; soon after, they appeared to have made their way through the pores of that structure, and then the usual deposit occurred on the under side of the membrane: simultaneously the hydraulic current changed, and the level of the fluid in the tube began to rise.

Fig. 4.

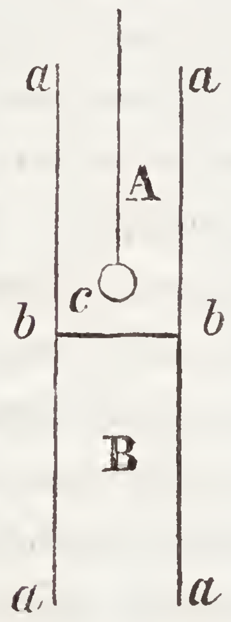
(*d*) A semicircular piece of very thin sheet iron was placed on the inside of the bladder; it caused, in a very short time, a copious precipitate of the copper on that part of the bladder on which it lay, the remainder being free from metallic deposit. A very well marked change of hydrostatic level occurred. On leaning the tube, the thin

piece of sheet iron was found to adhere to the bladder; and on tearing away the cupreous deposit, the little veins communicating through the porous texture, were visible without a lens.

(*e*) Lastly, when the relative position of the arrangement was reversed, the pieces of iron being placed below the membrane, and the copper solution above, so that the little filaments of metallic matter could not reach the tissue, on account of their weight, but fell down. Or, when they were destroyed, by mechanical means, as fast as they formed, no deposit ever occurred on the bladder.

41. The experiments marked (*c*) and (*e*) especially, and the other experiments incidentally, prove that a perfect metallic communication must extend from the decomposing metal to the under side of the membrane, through the very substance of that structure; and this observation enables us to give the true theory of the process. Let *a a a a*, fig. 5, be a tube, divided in some portion of its length by a membranous partition *b b*, on one side of which A, pure water, is placed, containing the decomposing metal *c*, and on the other side B, the metallic solution intended to be decomposed. Owing to the obstruction caused by the membranous diaphragm, the diffusion of the water into the solution, and of the solution into the water, will be retarded; in the course of time, however, it will take place. Then, as soon as any of the metallic salt has reached the lower part of the decomposing metal, reduction ensues, in virtue of the common play of chemical affinity, the first portion of the metal thus eliminated adhering to the surface of the decomposing metal, and forming with it an active voltaic couple; the decomposing metal being thereby rendered positive, and the eliminated metal negative. Of course, the reduction of the dissolved metal continues, the aggregate of filaments extending itself down by its weight towards the diaphragm, and as the solution becomes stronger and stronger the nearer the filaments approach the bladder, so the metallic deposit becomes more abundant. No obstruction is experienced in passing through the pores of the diaphragm, because the metallic solution is still present there, and is reduced. But, the moment any one of the metallic veins has penetrated to the under side of the membrane, the process goes on with tenfold activity. The metallic deposit, when it first started from the decomposing metal, was perhaps merely a capillary thread, for the solution through which it was passing was so weak that a greater quantity could not be pre-

Fig. 5.



sented; as it neared the upper surface of the diaphragm, it became of stouter substance, because the solution being stronger, the supply was more abundant; and now, having passed the barrier and reached the strong metallic solution, the deposit is at once at a maximum. Hence we account for the circumstance that the reduction of the metal chiefly takes place on the under side of the membrane.

42. It may here be asked, how is the acid in the metallic solution conveyed from a distance to the decomposing metal, so as to unite with it? It was to encounter this query, and to answer it, that I have been induced to examine so much in detail the whole of this process. There is no physical difference between the deposits here spoken of, and those known formerly to chemists under the name of Arbor Saturni and Arbor Dianæ; for the bladder or other membrane being freely penetrated, impresses no sort of action or change on the process in anywise. The same difficulty here met with, occurs in all such cases of metallic precipitations. For example, in making the lead tree, by the action of a piece of zinc on some saturnine solution, the particles of lead are often evolved at a distance of six or eight inches from the decomposing metal. How, it may be asked, is the acid transported in this case? More than a century ago, La Condamine endeavoured to account for this, but the state of chemical knowledge at that time did not enable him to assign the true reason, and he was forced to infer that currents actually traversed the solution, making their way to the decomposing metal. All decompositions brought about by the agency of the voltaic battery, are cases in point. The elements of water are separately evolved when the electrodes are many inches apart, and the decomposition of the very salts here under consideration occurs in the same way. It is now generally admitted, that these decompositions do not occur to solitary particles at a time; but a chain of them, extending from one electrode to the other, undergoes simultaneous decompositions and recompositions, a process which eventuates in the elimination of the separate ingredients at opposite extremities of the chain. This explanation applies to the case here considered.

43. In support of the explanation here given, the phenomenon of change of hydrostatic level affords a very powerful evidence. It was stated in sect. 39 (*c*) that previous to the establishment of a voltaic current from one side of the bladder to the other, the hydraulic current set from the water toward the solution, and therefore the level in the tube kept falling; but so soon as the voltaic current passed through the barrier, the hydraulic current changed, and the level in the tube rose rapidly. Similar changes of level have been noticed, when voltaic

currents pass through membranes, by Mr. Porrett and other chemists; they appear to be certain indexes of that molecular interchange (not current) which eventuates in polar decomposition.

44. I therefore reject, entirely, this experiment, as having any thing whatever to do with the phenomena of tissue action, or as affording an example of the powerful decomposing agency of membranes. It has been considered in detail, inasmuch as it is as necessary, in studying the elements of a science which, like physiology, is yet in its infancy, to discard whatever is irrelevant or erroneous, as to point out what is pertinent and true.

45. After a very full examination of the question before us, it is not to be concealed, that the decision to which we are constrained to come, is entirely unfavourable to the opinion commonly held as respects endosmosis. To rank it as a peculiar power, is unquestionably erroneous; to regard it as a manifestation of organization, or the attribute of organized structures, is equally so. Ever since the leading phenomena were made known by Porrett, Fischer, Gustave Magnus, and Dutrochet, they have been extensively applied in the elucidation of kindred actions in the vital frame; the causes of a variety of diseases have been explained, as also the rationale of some modes of treatment. A premature application of principles, ill understood, is to be deprecated. On the discovery of a new fact, it is not always easy to determine its relation and position in the chain of knowledge; a confused idea is generally entertained of it; nor is it until time and experience have abstracted from it whatever was mysterious and doubtful, that we see clearly its true locality in respect of other facts, how they bear upon it, and how it bears upon them.

(*a*) We conclude, therefore, that endosmosis is not a new power, nor does it bear any peculiar relation to organization; but that it is a manifestation of capillary attraction.

(*b*) That so far as the examination in this memoir has extended, there is no case upon record in which endosmosis has effected a real and undoubted chemical decomposition; that several cases of such reputed change, depend plainly on the action of other agents; and hence that those reported instances of the production of secreted fluids by dead membranes, through this power, are fanciful illusions.

46. The experiments here considered, are such as were conceived to be the most important, and those generally referred to, as substantiating conclusions which conflict with that here given. If others be known, not subject to these or similar strictures, I am ignorant of them: such may by chance hereafter be found; the decision now given refers to what have been regarded as actual proofs, and not to contin-

gent evidence. That chemical changes of all kinds occur in tissues and glands, is not to be doubted; but we must not confound together a change effected *in* a tissue, and one effected *through* it. Urine is readily separated from arterial blood *in* the kidney; yet would any one expect, on placing blood *upon* a kidney, that urine would drop through it? A candid examination of many of the fashionable applications of endosmosis to physiological functions, will discover no wide difference between them and this hypothetical case.

47. It is well known that those who first cultivated this department of science, viewed it as a case of electrical action. In this they did not go far astray; the machinery being erroneous though the principle was true. Capillarity is unquestionably an electro-statical phenomenon, and hence will hereafter come to be intimately allied with chemistry. An important and extensive series of effects, which now pass as instances of electrical attraction, will be assigned to it; such the adhesion of colouring matter and dyes to cloth, the silvering to a looking-glass, the solution of salts, and generally all cases of union where the uniting bodies lose none of their prominent characteristics.

March 24th, 1838.

Art. III. *Cases of Surgery.* By M. Morrison, M. D., Member of the Medical Chirurgical Society of Maryland, and Licentiate of Medicine and Surgery of the Medical Tribunal of Buenos Ayres.

Case I. *Stricture of the Urethra; partial destruction of this canal; urinary fistulæ.*—Dr. Angel Gonsales, ætat 46, a native of Buenos Ayres, had suffered since 1827 with strictures in the urethra. In 1831, an abscess formed *in perineo,* which opened of itself, leaving a urinary fistula; since that period two fistulæ have likewise formed *in ano*. In the month of December, 1835, he took a severe cold, which affected the bladder, and produced a retention of urine; another abscess now formed *in perineo,* which was opened with a lancet, and from some attempts which were made by the physician then in attendance, to pass an instrument into the bladder, there unfortunately resulted a false passage which communicated with the rectum. From this time forward, when the patient was about to make water, he had to incline the body forwards, the stream of water flowing from the fistula in perineo backwards, and but a very few drops escaping through

its natural passage. This state of things produced a high degree of constitutional irritation and fever.

I saw the patient for the first time, in consultation with the attendant physician, on the 2nd of March; he was then very much emaciated; suffered from night sweats; pulse 120, and had been confined to bed for the last two months. Upon examination I found the skin of the perineum detached, the subcutaneous tissues having been destroyed by ulceration. The smallest sized gum elastic bougie could not be introduced into the bladder. The urine cannot be retained longer than an hour; deposits, when passed, a large quantity of mucous. Notwithstanding the patient's low and distressing state, I thought that if an instrument were introduced by which the urine might pass off, the parts would heal. At a consultation of surgeons held on the 4th of March, my views were explained, and being adopted, I proceeded to operate in presence of Drs. Portela, Almayra, and Fontana.

The patient being arranged as if about to undergo the lateral operation for the stone, an incision was made parallel with the urethra, which exposed the *musculi acceleratores urinæ;* these being divided, the urethra was laid bare; a silver probe introduced per urethram came out at the false passage on the right side of the bulb; the original fistula was far back in the membranous portion of the canal; a probe introduced in the fistula readily passed into the bladder. The prostate gland was found very much enlarged. The callous edges of the fistula being pared away, I then divided the bulb and membranous portion as far back as the fistula. A No. 10 bougie was passed into the bladder, and retained in its place by tapes carried round the scrotum, and the patient put to bed.

5th. Had a chill last night; urine escapes by the wound; suffers no inconvenience from the presence of the instrument; pulse 116; ordered to lie only on one side without changing his position.

6th. Doing very well, passes all his water through the instrument; pulse 112.

My patient went on improving until the 15th of this month, when the instrument was stopped up by mucus, and the urine began to escape again by the wound. Another bougie was introduced, and things again went on well until the 30th, when it was necessary to open an abscess, which formed in the *corpora cavernosa penis.* It was now also necessary to discontinue the use of the instrument. My patient's health had considerably improved since the operation, his night sweats had disappeared, and his appetite was good. The wound healed up very slowly, and notwithstanding all my efforts there remains a small fistula in perineo, from which a little water oozes occa-

sionally. Gonzales, however, is now possessed of a good share of *embonpoint,* and is able to attend to his business. He can retain his water three hours, which continues to deposit a mucous sediment. This patient was seen, whilst under my treatment, by Drs. Chase and Pickney, of the U. S. Navy.

Case II. *Imperforate Vagina.*—Towards the latter part of February, 1836, I was requested to visit Doña Gregoria Llanos, ætat 19, a native of Buenos Ayres, and at that time residing in the Calle de la Reconguista. This young woman had been suffering since her fourteenth year with a retention of the menses, in consequence of a congenital imperforation of the vagina. At each menstrual period she suffered very much, particularly at night; the bearing down pains were sometimes so excruciating that she frequently wrapt a blanket around her body and rolled herself on the floor; her screams have been heard at the distance of half a square. She says that at the period of menstruation her genital parts become very tender, and that a tumour presents itself *in perineo;* the pains seldom continue longer than two days. Upon examination I found the vagina completely closed; by pushing the finger, however, in the direction of that canal, some traces of it could be distinguished, and by pressing on the hypogastric region at the same time, an obscure fluctuation was perceived. This proceeding gave the patient great pain. The *meatus urinarius* was very low, and appeared to be drawn downwards; the clitoris was of its natural size; the hypogastric region very prominent; in fact, any one unacquainted with the nature of her case would suppose her to be pregnant. A large and circumscribed tumour occupied the right iliac region, which I concluded to be the right ovarium. I now told her it would be necessary to undergo an operation, to which, by giving her hopes of success, she readily consented. The operation was deferred for the present, and I did not see her again until the latter end of the following April.

April 29th, M. After having been examined by Drs. Portela and Carter, the patient was placed on a table as for the operation of lithotomy. A transverse incision, of little more than half an inch in length, was made a few lines below the *meatus urinarius,* by which the hymen, (if such it may be termed,) which consisted of a dense ligamentous substance, was divided. This incision, however, only revealed new obstacles to be overcome. About an inch and a half within the cavity of the vagina another dense membrane was discovered, which prevented the egress of the contents of the womb. Fluctuation was now very evident. I introduced the forefinger of my

left hand, along which I carried a small scalpel, and with this instrument I divided the septum. On withdrawing the instrument a grumous substance of a chocolate colour began to flow out, and the discharge continued until four pounds were evacuated. The prominence of the hypogastrium, together with the tumour of the right iliac region, then entirely disappeared, and a large gum elastic catheter having been introduced to prevent the closing of the parts the patient was put to bed.

30*th*. At 10, A. M., I had the pleasure to find my patient with her *catamenia*; she passed a very good night; no pain in the region of the womb; no inconvenience in making water; pulse 70.

May 1*st*. Had a severe chill in the night; has vomited several times; menstruation suspended; very restless; skin hot; tenderness of the hypogastrium; pulse 130, and hard. I bled her twenty ounces, when she fainted. At 8 o'clock, P. M., extreme tenderness in the hypogastric region; twenty leeches were applied, the bleeding from which was kept up by warm fomentations.

2*nd*. Was delirious through the night, no discharge from the vagina; a small tumour has made its appearance in the right iliac region; abdomen to be fomented with a decoction of poppy heads; pulse 130.

3*d*. Abdomen tympanitic, extremely tender to the touch; has had no discharge from the bowels since the day of the operation; pulse 130. Ten cups with scarifications to be applied; and an *enema* of tepid water, to which was added an ounce of almond oil, to be administered.

4*th*. Bowels moved three times in the course of yesterday afternoon; passed a very bad night; much thirst; skin very hot and dry; tenderness of the abdomen less; pulse 130. To take a tepid bath at 8, P. M.

5*th*. I found my patient sitting up in bed with a very wild expression of countenance; says that there is nothing the matter with her; has been delirious through the night; pulse 130. Ordered 20 grs. ipecacuanha.

6*th*. Four bilious vomitings were produced by the emetic of yesterday, after which patient slept three hours; no pain in the region of the womb; swelling of the abdomen has subsided; tumour in the right iliac region as large as before the operation; pulse 130. Fomentations to the tumour.

7*th*. Passed a tolerably good night; tumour continues increasing, but is not so tender as it was; pulse 120. Fomentations to be continued.

8*th*. As yesterday pulse 120. An enema.

9*th*. The tumour has enlarged; has had two chills during the night; spirits much depressed, feels very weak; pulse 120. Chicken broth.

10*th*. Bowels moved twice since my visit of yesterday; has had several chills of short duration; the tumour to day extends as high up as the twelfth rib, and inwards to within an inch of the *linea alba;* it increases in volume from below upwards, and resembles an ostrich egg in shape, and is as large; fluctuation in it very distinct; patient very much emaciated; pulse 120.

11*th*. Five alvine discharges during the night, the three latter of which consisted of a sanguineo-purulent matter; the tumour has disappeared; patient's spirits much better; pulse 112; a discharge of a *muco*-purulent fluid from the vagina. A blister to be applied to the right iliac region.

The blister was kept open for fifteen days with the savine ointment. From this period my patient convalesced rapidly, and on the 20th of August following she menstruated. There can be no doubt but that the ovarium had suppurated in this case, which, fortunately for the patient, had formed adhesions with the ascending colon, into which organ the matter contained in the tumour was conducted by the process of progressive ulceration. It will be remembered that this tumour likewise disappeared on the day of the operation, which shows that there was a communication established between the tumour and the womb. I have some doubts whether the grumous matter which I have mentioned before, might not have been contained in the fallopian tube distending it so as to form the tumour which existed previous to the operation.

It gives me pleasure to add that this young woman has enjoyed very good health up to the present date, January, 1838.

Case III. *Pendulous Aneurismal Tumour on the Thigh.*—Don Bartolo Xerez, a native of the province of Santiago del Estero, ætat 35, presented himself in my office on the 1st of November, 1836, for advice respecting a pulsating tumour which hung pendulously from his left thigh, and was situated between the origin of the *arteria profunda femoris* and Poupart's ligament.

This tumour resulted from a wound with a knife, which transfixed the artery and vein. The patient told me that in riding at full gallop in the month of August, 1825, the belt in which he carried his knife shifted its position, and in the act of bringing his horse suddenly to a stand, the knife piercing its scabbard, passed through his clothing and wounded his thigh. The hemorrhage was trifling, and was checked by tying a handkerchief around the limb. He suffered no incon-

venience from the wound, which healed of itself without any further attention. About a month after, however, he noticed an elevation, which pulsated, in the site of the cicatrix; it gave him no pain, but went on increasing, and at the expiration of four months acquired the size of a small fig, to the form of which he said it bore a very great resemblance. At that time he resided in his native province, and there being no physicians nearer to him than those who practised in the cities of Mendosa or Cordavo, he obtained no medical advice. The tumour ceased to increase in size, and did not incommode him in any manner until the month of May, 1836, when, being engaged in branding cattle on an estancia about sixty leagues to the south of Buenos Ayres, the tumour suddenly became very painful, and began to enlarge. From this period it incommoded him in riding, and became so painful in the month of October that he had to keep his bed. He now resolved to visit Buenos Ayres for medical aid. When I first saw him the tumour was as large as the human uterus in the third month of gestation, and I can think of no object which it resembled more than that organ. It hung pendulously from the thigh by a thick neck or pedicle, and its movements were isochronous with those of the heart; sibilation was very distinct in it, and its parietes were so thinned by distension that at the site of the cicatrix the skin was not thicker than a bladder. When pressure was made on the crural artery at the brim of the pelvis, the tumour became flaccid, and the sibilation ceased; pressure being made on the tumour and crural artery at the same time, the former was entirely emptied of its contents, the blood flowing downwards; when pressure was removed the tumour became distended by the ingress of venous blood, and the moment the pressure was removed from the crural artery, the tumour was immediately distended to its full extent, and the sibilation returned. When emptied of its contents spiculæ of ossific matter could be felt in various parts of its walls, but more numerous in its pedicle, communicating to the latter a peculiar hardness, and destroying its elasticity. The leg had never swelled. The crural artery above the tumour was considerably larger than its fellow on the opposite side, a circumstance, to which, I regret to say, I gave too much importance. I proposed to Xerez to operate, and as he was incapacitated from labour he readily acceded to my proposition.

On the 5th of November, in a consultation of surgeons, it was agreed that an operation was imperiously called for by reason of the extreme tenuity of the walls of the tumour, particularly in the site of the cicatrix. As the patient had been confined to bed some few days previous, we proceeded to operate in presence of Drs. Portela and

Bombilleier, according to the method of Abernethy, applying but one ligature on the artery. The wound was dressed with adhesive straps, over which pledgets of lint were placed, and the extremity being bandaged with flannel rollers, the patient was put to bed. His body was placed in an easy position, with the leg partially flexed on the thigh, and the thigh on the pelvis, and bottles of hot water put to the leg and foot.

8, P. M. Excruciating pain in the leg of the operated side; coldness of the toes, which, together with the foot, was sensible to the touch. The patient compares the pain in the tibia to be such as if boiling lead had been poured into it; pulse 120; heart labours very much; slight difficulty of breathing. I took twenty ounces of blood from his arm, and remained with my patient until 10 o'clock. To relieve the pain of the leg an *enema* of two ounces of mucilage, in which were dissolved two grains of opium, was administered.

6*th.* The pain of the leg continues, but is not so intense as it was last night; the patient has vomited twice this morning; the foot is very much swollen and insensible to the touch; meteorism of the abdomen; tenderness of the epigastrium; respiration hurried; pulse 130, and intermittent. An emollient enema was administered, which produced an evacuation, and the discharge of a large quantity of gas, to the very great relief of the patient.

10*th,* P. M. Has vomited several times in the course of the day; thirst very great; no pain in the leg, which, together with the foot, is very much swelled; pulse 120, with intermissions. I now suggested to the patient the urgent necessity of amputating the leg in order to save his life. He would not listen to the proposal. Through the efforts in vomiting, the dressings had been removed from the wound, which was very painful, and looked bad; it discharged a thin and darkish sanies. Fresh dressings were applied. Previous to my leaving the patient for the night, I ventured once more to speak of amputation, at which Xerez showed evident signs of mental distress, and weeping, assured me that he was resigned to his fate.

7*th.* Slept none last night; constant eructations, accompanied with a discharge of a dark greenish very bitter matter; body covered with a clammy sweat; abdomen very much distended; pulse 120, and very irregular. At 1 P. M. nature now gave signs that all was lost; frequent singultus; hands and wrists cold; tongue black and parched; lips and nose below the natural temperature; the wound black and filled with an offensive sanies. It was truly distressing to witness the agonies of this poor fellow, which continued until 4 P. M., when he

lost his speech and mental faculties. He died at 5 o'clock; fifty-three hours from the operation.

The friends of the deceased could not be prevailed on to allow me to examine the body, but I was fortunate enough to receive permission to remove the tumour, which is now in my possession. To dissect it out, I extended the wound freely upwards, and detaching the peritoneum from the posterior wall of the abdomen, and pushing it upwards, divided the iliac artery and vein as high up as the bifurcation of the aorta; and the dissection being continued downwards as far as the profunda femoris, the entire piece was removed. At the site of the ligature, the artery was divided by the efforts in vomiting, the ligature remaining attached to the upper extremity of the artery. There was a coagulum in the artery of an inch and better in length—a circumstance which throws new light on the theory of Mr. Jones. There was likewise a coagulum formed in the inguinal extremity of the artery. Quills introduced into the artery and vein passed readily into the aneurismal sack.

We believe that this is the second case of varix for the cure of which the external iliac was tied. The other is recorded in Hennen's Military Surgery.

Case IV. *Popliteal Aneurism.*—Don Manuel Carrasco, ætat 42, a native of this province, consulted me in the beginning of January, 1837. His right leg was œdematous, and a large pulsating tumour occupied the popliteal cavity of the same side. While taking a warm bath about twelve months ago, he was suddenly seized with a very acute pain in the right ham; in putting down his hand to ascertain its cause, he discovered a small pulsating tumour in the popliteal cavity. When I saw him, the neighbouring tissues and the knee itself were much inflamed and swollen. I explained to the patient the nature of this affection, and the operation necessary for its cure. In a consultation of surgeons it was agreed to operate. At noon on the 15th January, in presence of Drs. Portela and Revera, I laid bare and tied the artery with a flat silk ligature, two inches and a half below the origin of the *arteria profunda femoris.* The patient suffered a great deal during the remainder of the day with pains in the foot; and at 8 P. M. there was a coldness of the toes; pulse 80.

16*th.* Patient passed a bad night, more in consequence of a rheumatic affection of the walls of the chest than from any inconvenience resulting from the operation; he complains of a pain in the tendo achillis; pulse 90; foot of its natural temperature.

17th. Passed a good night; leg and foot of its natural temperature; pulse 86; ordered a purgative enema.

18th. The adhesive plaster with which the wound was dressed, produced an erysipelatous eruption, with phlyctænæ of the thigh; this eruption extended itself above Poupart's ligament. I removed the dressings from the wound, in which union had taken place. The eruption was dressed with simple ointment; pulse 100.

19th. The local irritation produced by the adhesive plaster has diminished; pulse 90. From this period the patient progressively improved; the tumour grew daily less, and the rheumatic pains of his chest subsided altogether. On the 4th February, the celebrated traveller and profound naturalist, M. Bompland, visited my patient with me.

13th February. This day the ligature came away, and in a few days afterwards el Senor Carrasco sat up on a sofa. The leg continued very weak, a circumstance which obliged the patient to make use of crutches until the latter end of March, when he left this city to go to his estancia at the other side of the river Sallado. This gentleman's health had been very indifferent for some time previous to the operation: it improved considerably during the period he was under my treatment, which I attribute to the very strict diet to which he was subjected. He continues well up to the present date, January, 1838; the use of his leg is completely restored.

Case V. *Inguinal Aneurism, attended with consecutive Hemorrhage.*—Don Pedro Suares, ætat 25, a watchman, came to my office in the beginning of February, 1837, to consult me respecting a pulsating tumour in the left groin. He told me he had recently left the hospital, where he had been judiciously subjected to a course of treatment calculated to retard the increase of the tumour. On this his first visit to me, his leg was œdematous; the tumour in the groin pulsated strongly; the soft parts in the vicinity were swollen and tender to the touch. I explained to him the nature of this tumour, and the operation necessary for its cure, and the probability of death occurring as a consequence of it. I now read to him an account of a similar operation* which I performed on the 3d December, 1835. This poor fellow told me that he was resolved to undergo any operation by which his life might be saved. I advised him to go home, to remain quiet, to keep cooling and sedative applications to the tumour, and to send me the number of his house, that I might visit him. From

* Vide American Journal of Medical Sciences, Vol. XIX. page 333.

this period I lost sight of Suares for three weeks, when, in place of sending for me, he had the imprudence to come to my house on foot. The size and aspect of the tumour on this day were truly alarming, and by reason of its inflamed state, the patient had to bend forward and make use of a stick in walking, and drag the leg of the affected side after him. The following day I called a consultation of surgeons, and we resolved to operate immediately: nevertheless, delay occurred, in consequence of this poor fellow having to seek a place through charity where he might remain during his confinement to bed. On the 11th of March, in walking a distance of a few squares, the tumour suddenly increased to an enormous size. I have considered it necessary to be thus particular, to show why I did not operate earlier.

On the 12th of March, my patient having received the consolations of religion, the following operation was performed in presence of Dr. Portela, Lecturer on Anatomy and Physiology in the Medical School of Buenos Ayres, and of Dr. Alexander Dick, Member of the College of Surgeons of London. I made an incision in the lower and lateral part of the abdomen on the left side, about half an inch on the outside of the crural artery, commencing a little above Poupart's ligament, and extending three inches directly upwards. By this incision the tendon of the external oblique muscle was laid bare, which was divided to the extent of the wound in the integuments; the internal oblique and transversalis muscles, were now detached from Poupart's ligament, and divided directly upwards with the probe-pointed bistoury to the extent of two inches; the peritoneum was then detached from its surrounding connections, (the relation of the parts were so altered from the size of the tumour that the spermatic cord was not seen in this step of the operation) and pushes upwards towards the sacro-iliac junction. The external iliac artery was now sought for and raised from its bed to a sufficient extent to admit the introduction of an aneurismal needle under it, and immediately secured with a flat silk ligature. The tumour was but slightly diminished by the application of the ligature. It extended from the symphysis of the pubis to the anterior inferior spinous process of the ileum downwards to the extent of two inches below Poupart's ligament. During the course of the operation the patient suffered from excruciating shooting pains through the abdomen, and downwards into the anus; a spasmodic retraction (I had almost said an obliteration) of the testicles took place, which caused him to scream out from the intensity of his sufferings. I attributed these phenomena to the inflamed state of the parts implicated in the operation. When the patient was made to put his hand upon the tumour, and felt that all

pulsation had ceased, he appeared to forget all his sufferings. His leg was flexed upon the thigh and the thigh on the pelvis, the limb wrapped in a flannel roller, and bottles of hot water put to the leg and foot. The operation occupied ten minutes. At 8 o'clock, P. M., his pulse was at 60, the extremity free of pain.

13*th.* Passed a good night; on the afternoon of this day his pulse rose to 82, and was characterized by a peculiar hardness; the great vessels in the neck and the temporal arteries were throbbing violently, and although he had no pain in the breast he was breathing with difficulty. I opened a vein in his arm and bled him to twenty ounces, which afforded signal relief; his pulse rose to 100, and became soft. Complains of heat in the tumour; cloths wetted in cold water were applied to it.

14*th.* Pulse 90; a saline purgative draught was administered, which operated through the course of the day.

15*th.* Pulse 84. Dr. Cortines, of Salta, visited my patient with me to-day.

16*th.* Tumour does not diminish; the dressings were removed from the wound, in which no union had taken place by reason of the tension of the integuments from the size of the tumour. I now dressed the wound by filling it with lint, as advised by Scarpa.* From this date nothing of consequence occurred until the 23d, when, notwithstanding the cold applications, fluctuation was distinct in the tumour. Dr. Lamb, of H. B. M. packet, visited my patient to-day; we now entertained some fears for our patient's safety, in consequence of the degeneration of the contents of the tumour. I resolved, however, not to touch it until the separation of the ligature.

On the 25th, being fourteen days from the operation, the ligature came away with the dressings, and from the advanced stage of the suppurative process in the tumour, and the inflamed state of the integuments which covered it, no alternative was left but to open it. I accordingly made a small puncture with a very fine lancet, in the outer and inferior portion of it; a sanguineo-purulent matter flowed out; the tumour soon disappeared, and continued suppurating until the 31st, when, at 6, P. M., hemorrhage took place within the sac, the blood flowed out in a stream, but the patient, with great presence of mind, made pressure over the site of the puncture with lint; the blood continued to flow until the sac filled, and when I arrived, the groin, now distended with the coagulated blood, presented the same appearance as before the operation.

* Vide Reflexiones et Observationes Anatomico-Chirurgicales sur L'Aneurisme; par A. Scarpa, p. 297. Paris, 1809.

April 1*st.* In presence of Drs. Dick and Portela, I laid open the tumour in its entire extent, and, to our astonishment, no hemorrhage occurred. The femoral artery, in the bottom of the sac, lay denuded of its superior connections and its upper extremity forming a cul-de-sac, which was an inch distant from Poupart's ligament. We had a fine demonstration of the manner in which the circulation is carried on in the thigh after the external iliac is tied, as the main trunk of the artery was obliterated, or rather destroyed, from the site of the ligature to an inch below Poupart's ligament. We were satisfied that the blood was flowing into the femoral from the circumflex arteries, or rather from them into the profunda, and from the profunda into the femoral artery. We likewise satisfied ourselves, by touching the denuded extremity of the femoral artery, that no coagulum was formed within. We could not decide whence the hemorrhage proceeded the night before, but concluded that it might have taken place from some of the branches about the groin. The diseased and isolated state of the femoral artery deterred us from disturbing it to lay a ligature on it above the profunda; and the fear of gangrene of the extremity through want of blood, deterred us from tying it below the origin of the *arteria profunda femoris*; under these circumstances we resolved to fill the sac, and leave the case to nature.

2*nd.* At my visit I found my patient in good spirits, his pulse at 84, and soft; every thing was going on well, but at 9, P. M., a frightful hemorrhage took place, which was stopped after a serious loss of blood, by making pressure with lint as I had directed in case such an accident should occur. Upon my arrival my patient's pulse was almost imperceptible, he was pale as death, but his moral courage remained unshaken. I now hastened to ascertain whence the hemorrhage proceeded, and, to my sorrow, discovered it to be from the main trunk of the femoral artery, which I grasped with the thumb and forefinger of my right hand, but the artery was so altered by disease that a piece of it an inch in length came away between my fingers; the blood rushed from the dilated artery in frightful quantity. To stop the hemorrhage I thrust my forefinger into the gaping mouth of the artery, a circumstance which conveys an idea of its dilated state better than any description I could give. Despairing now of being able to save the life of my patient, I made my opinion of his case known to him, and told him that even to stop the hemorrhage it was necessary to perform a painful operation; his answer was that he resigned himself entirely into my hands.

With the view of detaching the profunda from the main trunk of the femoral artery, (after showing one of the bystanders how to plug

he artery with his finger,) I made an incision in the course of the last mentioned artery down the thigh, and laid it bare; next detached the femoral from the profunda, and fruitlessly endeavoured to secure the latter artery with a ligature, the hemorrhage, however, submitted to a compress of lint, upon which I dressed the wound, binding down the dressings firmly with a bandage. The lateral circulation which conveyed blood into the femoral being now cut off, I lost all hopes of the case, and told the patient to take of any nourishment which he desired; he requested some sweetmeats, which were immediately procured. The leg being placed in an easy position, bottles of hot water were applied to the extremity.

3*d.* Passed a restless night; pulse 110 and feeble; the toes of the operated limb were cold, no feeling in the great toe, and the foot itself was enormously swelled; in fact, life was almost extinct in it; my dread of gangrene was now extreme, but to excite the venous circulation, I made a high degree of pressure to the foot by means of a bandage.

4*th.* Swelling of the foot less, heat more developed in it; sensation returned to the great toe; pulse 100. From this date my patient began to improve again. On the 6th of April suppuration was freely established in the wound, and on the following day (notwithstanding the dressings were constantly moistened with a strong solution of the chloride of lime) the fœtor was so great that I was compelled to remove the dressings; the wound looked well, and granulations began to shoot up. Every thing went on well until the 12th, when a hemorrhage occurred at midnight from the internal circumflex artery. When I arrived the bleeding had stopped, the patient was pulseless; there was no sensation in the limb of the operated side; I did not hesitate in applying the actual cautery to the mouth of the bleeding vessel: a death-like coldness spread itself over the body of the patient, and his stomach rejected every thing he swallowed; he was also tormented with a burning thirst. Having bandaged his thigh, bottles of hot water were applied to his extremities, and his body rubbed with warm flannels.

13*th.* Pulse 120, and feeble; sensation returned to the limb.

14*th.* Being apprehensive of another hemorrhage, I called a consultation, and we resolved to tie the internal circumflex artery on the pudic side of the femoral vein, and the operation was attempted, but without success, in the presence of the two medical gentlemen already mentioned, and Dr. Francisco Almeria, Professor of Medicine. The cautery was then again applied to the mouth of the vessel which was situated immediately beneath the femoral vein; the sides of the

wound were brought together, and compresses laid over it and retained with a bandage. From this date every thing went on well, the wound in the thigh healed rapidly, and the patient's strength was soon restored. A fistulous sinus, which had formed in the walls of the abdomen, was healed by dilating it with tents moistened in the tincture of myrrh. Three large ulcers in the vicinity of the external malleolus required attention; they were dressed with applications of a mildly stimulating character. My patient began to sit up to his meals. On the 12th of May, Dr. Mertufer, who had seen the patient previous to the operation, did me the favour to visit Suares with me.

After the last attack of hemorrhage, a phenomenon occurred worthy of recording; the patient lost sensibility to the touch all over the body, and did not recover it for twenty-five days. A coldness of the knee of the operated side began to disappear about this period, and a genial heat developed itself in the whole extremity; the skin, which was shrivelled and pale over the whole body from loss of blood, likewise began to assume its natural smoothness and colour.

From the history of this case, which I believe to be without a parallel in the annals of surgery, (as the hemorrhage in Dupuytren's celebrated case came from the smaller arteries, vide *Leçons Orales Faites á l'hotel Dieu*, par M. le Baron Dupuytren, tome quatrième,) it will be seen how capable nature is to carry on the circulation in an extremity, when not only the principal arterial trunk is obliterated, but likewise when all its branches are separated from it, a circumstance which will not fail to give an impulse to the already advanced state of our surgical knowledge of the arteries.

Suares made use of crutches until the month of December. The use of the extremity at this date, February, 1838, is perfectly restored, and he goes about both on foot and on horseback with as much facility as if the operation had not been performed. As the aneurism made its appearance when Suares was in the employ of the Superior Government, General Rosas, Captain General of this province, has conferred a pension on him.

Case VI. *Spasmodic Constriction, with Fissures of the Anus.*—Don Manuel Rubio, ætat 34, began to suffer in July, 1836, with severe pains in the anus when in the act of relieving his bowels; his alvine dejections were frequently tinged with blood. At the expiration of two months, intolerable itching in the fundament came on, which continued an hour, and sometimes two, after stool. At this time he lived at an estancia very far distant from Buenos Ayres, and consequently remote from medical advice; he therefore applied to quacks, and in

the course of a short time made use of a number of barbarous remedies, but finding no relief, as a last resource he began to take Le Roy's purgative medicine, of which, in the course of four months, he took eighty-seven doses. Such impropriety greatly aggravated his disease, he was no longer able to ride on horseback. His sufferings were now so great that he diminished the quantity of his aliment in order to lessen the necessity of evacuating his bowels. He at length resolved to come to Buenos Ayres, and I saw him for the first time in the latter part of October, 1837. Upon examination I discovered some fissures at the verge of the anus, one of which was very deep, and extended inwards to the extent of half an inch; it was situated on the left side, and occupied the middle of the sphincter; its edges were elevated; the sphincter itself was callous and considerably swelled. The patient assured me that he had never had the venereal disease in any form; nevertheless, I put him on diet, and prescribed small doses of blue pill to be taken at bed time. I likewise ordered him to drink the compound decoction of sarsaparilla. I made an attempt to relieve this man by the introduction of M'Kenzie's patent metallic bougie, (having received a few of them together with his Book from London,) besmeared with Dupuytren's ointment, but without any appreciable effect. He became impatient, and he himself urged me to use more energetic means.

On the 24th November, 1837, I performed Boyer's operation of dividing the sphincter ani. (Vide *Traité des Maladies Chirurgicales*, par Boyer, Paris, 1834, tome x.) The incision was made in the site of the large fissure mentioned above, and extended directly inwards to the margin of the bowel; the fibres of the sphincter muscles were completely divided. The hemorrhage was very slight, but the patient suffered considerably from the inflamed state of the parts. I now applied the speculum, and was enabled to see far into the bowel, which was red and excoriated. The wound was dressed by introducing a small portion of dry lint, to prevent union taking place; a compress with the T bandage being applied, the patient was put to bed. From this period his sufferings ceased, and on the third day from the operation his bowels were moved, and, for the first time since the commencement of his disease, without pain in *the anus*. From this date I dressed the wound daily, and sponged the parts freely at every dressing with cold water. The other fissures healed up rapidly; and the wound itself was perfectly cicatrized at the end of six weeks, during which period the patient kept his bed.

Case VII. *Urinary Calculus.*—On the 4th of December, 1837, I was called to see Mr. James Campbell, ætat 40, a native of Bengal. I found him suffering with a retention of urine, caused by the presence of a calculus in the membranous portion of the urethra, which had passed from his bladder into the urinary canal the night before, and after remaining for some hours in the prostatic portion of the urethra, had gained the position already mentioned. His sufferings were extreme, from the efforts of the bladder to expel its contents. I endeavoured to grasp the calculus with the urethral forceps of Weiss, but its size rendered the attempt fruitless. The patient was immediately put into a warm bath; when he had been there half an hour, I introduced a No. 12 metallic bougie down to the stone, and having retained it there ten minutes, suddenly withdrew it a few inches, the patient making efforts at the same time to expel his urine. The stone by this manœuvre suddenly gained the bulb. The patient was now enabled to pass his water, the calculus giving no pain. I ordered him to drink freely of flaxseed tea; and returned again to see him three hours afterwards. He was suffering again with spasmodic contractions of the bladder, not a drop of urine passing. With the bougie I succeeded in getting the calculus to pass onwards in front of the scrotum, from which position, in part with my own efforts, and partly by the efforts of the patient to expel his urine, the foreign body was urged forwards into the corpus spongiosum urethræ. The patient was again enabled to empty his bladder. From its present position, the calculus passed readily on to the fossa navicularis. From this portion of the urethra it was dislodged with difficulty, by reason of the existence of a cicatrix in this spot; the patient being cut three years before to extract a calculus. I determined, if possible, to avoid that proceeding. The patient now suffered considerably from the compression which I made on the urethra behind the stone; but I had the satisfaction in a few minutes of seeing the stone at the meatus, from which place I dislodged it by grasping firmly with my forefinger and thumb the glands penis behind the calculus. The calculus is half an inch in length, and semilunar in form, and its surface is studded with irregular elevations; it weighs 26 grains. A calculus of this size being removed from the urethra without the loss of a single drop of blood, argues strongly against the propriety of cutting the urethra in similar cases; and, as it regards the dilatability of the urethra, may be regarded as a new argument in favour of lithotripsy.

Art. IV. *Researches in reference to the Causes, Duration, Termination, and Moral Treatment of Insanity.* By Pliny Earle, M. D.

Remarkable improvements have been made within the last half century in the treatment of insanity, but our knowledge of its causes and pathology have not advanced with equal rapidity. It is with the hope of contributing to our stock of information on these points, that the following communication is presented to the profession. The facts contained in it are chiefly obtained from the results of the observation of others; they are, however, brought together in such a manner, that from them, some conclusions, not before arrived at, may be drawn. The tables, with the exception of one or two of the smallest, are entirely new.

Of the history of insanity, of its classification, or of its division and definition, we shall say nothing, but proceed directly to its causes.

Causes.—These have, with evident propriety, been divided into first, those which *predispose* to the disease, and secondly, those which *excite* it.

1. *Predisposing Causes.*—Under this head we shall consider the constitution, temperament and complexion, age, sex, social relations, and education.

a The state of the *constitution* is undoubtedly, in many instances, a most powerfully disposing cause of some of the forms of insanity. A peculiar organization of the cerebro-spinal system, and, according to Dr. Rush, of the blood-vessels also, an organization molecular in its nature, and consequently, particularly in relation to the nervous system, inappreciable by the senses, favours the encroachment of the disease. This condition may be hereditary, or may arise, *de novo*, in a family entirely free from the maniacal taint. The progress recently made and which is still making in transcendental anatomy, together with the great improvements in microscopes, may encourage us in the belief that we shall eventually be enabled to ascertain the nature of this, if we may use the term, congenital lesion. We have abundant proofs that this cause is hereditary. At the Pennsylvania Hospital (Philadelphia) application was made for the simultaneous admission of three lunatics, members of the same family. One of the patients of the Retreat for the Insane, in Hartford, Connecticut, was the *eleventh* individual of his family who had suffered under an attack of mania. M. Esquirol says that hereditary transmission is more frequent among the opulent than in other classes of society. Such children of maniacs as are born before their parents become deranged, are less liable to inherit the predisposition than those who are born subse-

quently. Children whose parents are both maniacal, are more liable to the disease than those of whom but one parent is so. According to Dr. Barton, the children of persons in the decline of life are less subject to insanity than those whose parents are young.

In many instances the disease manifests itself in several of the individuals of the same family at nearly the same age. Dr. Rush says that among the patients in the Pennsylvania Hospital, were a father and two sons, all of whom became deranged between the ages of 60 and 70 years. "Two sons of a merchant in Switzerland died insane at the age of 19 years." Dr. Prichard mentions three other cases of a similar kind. M. Esquirol believes that *fright* in the mother during pregnancy may excite a strong predisposition to insanity in the infant with which she is pregnant. Although there are probably but few who will concur with him in the opinion, it is a point which, as being thus spoken of by an individual of so extensive observation, at least merits attention.

Discovered in early life, the constitutional predisposition, whether inherent or not, may be very much checked in its progress, if not entirely eradicated, by proper treatment.

b *Temperament and Complexion.* People of choleric and nervous temperaments are said to be more liable to the invasion of insanity than others; a predisposition which is greatly fostered in those who give a loose rein to their passions. Haslam, Rush, and some others, believe dark-coloured hair to be indicative of a maniacal predisposition. In Bethlehem Hospital, London, according to the former gentleman, of 265 patients, 205 had hair of this colour; and in the Pennsylvania Hospital, in 1812, according to the latter, of 79 insane inmates, 73 were of a similar description. The per centage with regard to Bethlehem Hospital is somewhat remarkable when we take into consideration the large proportion of people with light-coloured hair in England. It would not be remarkable in France. Dr. Prichard can trace a predisposition to no particular complexion.

c *Age.* The middle period of life is by far the most prolific in cases of mental alienation; and this from the evident reason that both males and females are more exposed, during that portion of their existence, to the various exciting causes, than they are in either early or advanced life. Attacks before puberty are extremely rare. Dr. Rush mentions four cases of the kind which came within his knowledge; and in St. Luke's Hospital, England, there was an insane child of but *two years of age.* Dolæus, Greding and Rush mention instances of attacks in very advanced life; the last mentioned having observed one which occurred in a person more than 80 years of age.

The British and the European continental writers upon the subject, generally, if not invariably, assert that more persons are attacked between the ages of 30 and 40 years, than during any other interval of ten years in life. This appears to be sustained by the following table of M. Georget and Dr. Burrows.

HOSPITALS.	No. of Cases.	AGES.							
		10–20	20–30	30–40	40–50	50–60	60–70	Over 70	Unknown.
French & English	4409	356	106	1416	361	461	174	35	
French	2507	140	465	572	521	350	265	189	6
Total	6916	496	571	1988	882	811	439	224	

How true soever this assertion may be with regard to Europe, we believe it not to be true if applied to the United States. This belief has been induced by researches, the results of which are embodied in the following table.

HOSPITALS.	Years.	10–20	20–30	30–40	40–50	50–60	60–70	70–80	Total.	REMARKS.
Retreat, Connecticut . .	7	19	107	73	54	20	6	4	286	3 unknown.
Pennsylvania		25	125	121	75	30	13	5	394	
M'Lean Asylum, Mass. .	15	70	352	264	191	91	38	9	1015	Many chronic.
Frankford Asylum, Penn'a.	4	2	27	21	11	7	10	3	81	
State Asylum, Kentucky	1	*8	39	24	10	5	2	1	89	* 6 idiots.
Pennsylvania, 1832 . .	1	3	32	29	27	33	12	2	138	
Totals		127	682	532	367	186	81	24	2003	

By this it appears that a considerably larger number become insane in the United States between the ages of 20 and 30, than during any other period of equal length. But the evidence of this table is, to a certain extent, deceptive; the ages reckoned are those of the patients *at the time they were admitted into the several hospitals*. Now, could these be so corrected as to state the age *at the time of the attack*, the table would be of more value, and we should have more striking evidence of the fact in question. But there was no means by which that correction could in all instances be made. Wherever the means didexist, advantage was taken of it, and the result is as follows:

HOSPITALS.	Years.	10–20	20–30	30–40	40–50	50–60	60–70	70–80	Total.	REMARKS.
Retreat, Connecticut . .	2	11	36	22	22	11	2	–	104	2 from infancy,
M'Lean, Massachusetts .	1	7	30	21	11	8	2	1	80	probably idiots.
Lunatic, Worcester, Mass.	–	35	127	99	70	33	15	5	384	
Frankford, Pennsylvania .	4	*9	32	16	9	7	5	2	80	*1 from infancy.
Totals		62	225	158	112	59	24	8	648	

The change effected by this correction is remarkably exemplified in the cases at the Frankford Asylum, *which are the same in both tables.* As they stand in the former, the proportion of those between 20 and 30 years to those between 30 and 40 is as 9 to 7; whereas in the latter it is as 2 to 1. In the total numbers of those in the former, those between the ages of 20 and 30 are to those between 30 and 40 nearly as 11 to 9; while in those of the latter the ratio is as 11 to 7.

d *Sex.* It was asserted by ancient writers that, in their time, more males than females suffered under the various forms of mental derangement. The reverse appears to be true in modern Europe. Pinel estimates that in France, in 1802, the ratio of insane females to males was as 2 to 1. In England, it is far less. At Bethlehem Hospital, agreeably to Dr. Haslam, of 8874 patients, 4042 were males, and 4832 females. At St. Luke's, there were one-third more females than males. M. Esquirol, from statistics derived from several countries, concludes that the proportion "does not, in fact, greatly exceed the difference which exists between the sexes in the ordinary state of population." Judging of the proportionate number of the sexes insane in the United States from those confined in the several hospitals, we must conclude that there are more males than females. See the following table.

HOSPITALS.	Time.	Males.	Females.	Total.
Pennsylvania	80 years.	2509	1209	3718
Retreat, Connecticut . .	9 "	183	199	382
State Asylum, Kentucky	12 "	334	168	502
M'Lean Asylum, Mass.	16 "	652	443	1095
Lunatic, Worcester, Mass.	3 "	225	160	385
Bloomingdale, New York		607	302	909
Total		4510	2481	6991

This makes the number of males to that of females as 15 to 8, or nearly as 2 to 1. We can hardly believe that there should be so great a predominance of males in the hospitals, if there were not in reality a greater number of them in the country who are insane. Should future observations prove that the evidence of this table is correct, to what shall we attribute the cause of the difference between the United States and the countries of Europe? We believe they must be sought, and *will be chiefly found* in the difference of situation of the males with regard to pecuniary affairs, and that of the females in society. But it would be untimely to enter into details with respect to these causes before the result in question is fairly proved.

Dr. Rush believed that the number of deranged females is greater than that of males, from the fact that the former are exposed to several

exciting causes from which the latter are exempt; such are the derangements of the catamenia, utero-gestation, parturition, and the peculiar situation of their sex in society. But, on the other hand, it will be found that a large proportion of male lunatics are brought to that unhappy situation by causes from which females are either partially or wholly free. Among these are intemperance and pecuniary embarrassments.

e *Social Relations.* M. Georget believes celibacy to be a predisposing cause of insanity. S. Tuke, also, considers it as among those which are the most prominent of this class. There is much plausibility in this opinion, even admitting it not to have been founded upon direct observation. Unmarried people are more liable than others to some of the exciting causes of the malady; and unmarried females, particularly, are more subject than those who are married to other nervous affections. Yet, admitting that there are a greater number of single than of married persons among the insane, it is still difficult to ascertain positively whether this is to be ascribed solely to the influence of celibacy. M. Desportes states, that of 1668 insane females, 980 were single, 291 widows, and 397 married; and of 764 insane males, 492 were single, 59 widowers, and 201 married.

The following table, compiled from the reports of several of the hospitals in the United States, goes to confirm the opinion of M. Georget with regard to females, and to disprove it with regard to males. It would serve to establish the truth of it also, if we include both sexes; for, of the 2422 patients numbered in it, 1262 were single, and but 1160 either were or had been married.

HOSPITALS.	MALES.				FEMALES.			
	Single . .	Married .	Widowers	Total . . .	Single . .	Married .	Widows .	Total . .
Pennsylvania	170	97	17	284	70	97	35	202
Retreat, Connecticut . .	119	80	4	203	80	86	12	178
Frankford, Pennsylvania .	27	18	3	48	22	6	5	33
M'Lean, Massachusetts .	340	264	–	604	173	238	–	411
" " one year	27	18	3	48	16	12	4	32
Lunatic, Worcester, Mass.	135	68	19	222	83	50	24	157
	818	545	46	1409	444	489	80	1013

f *Education.* An injudicious education is believed by Dr. Prichard to predispose to mental derangement. "It may be erroneous," says he, "in two ways:" (we abridge from the author) 1st, by too lenient

a government, allowing the passions to act uncontrolled and unsubdued, and never exercising that wholesome moral restraint which seems necessary to promote the happiness, as well as to conduce to the integrity of the health of the individual; and 2nd, by over-exertion of the mental faculties, and a neglect of the cultivation of the physical powers and the moral feelings. It is well that so prominent an individual as Dr. Prichard has raised his voice against the great error in modern education included under the second head. It is an evil which, in our country, exists to too great an extent, and calls loudly for reform—complete, unsparing, radical reform. And inasmuch as it involves the health and happiness of so great a portion of our countrymen, may we not hope that the subject will obtain an increased attention among those who have the power to effect a change?

Apoplexy, epilepsy and paralysis are considered among the predisposing causes of insanity, inasmuch as they induce a peculiar state of the encephalon, upon which this malady may easily supervene; but the most potent of all causes of this kind is a previous attack of mania.

2nd. *Exciting Causes.*—These are, like the predisposing, divided into two classes, *physical* and *moral.*

It will be perceived from the following classification of the causes, so far as they were known, of 1135 cases treated in several of the hospitals of the United States, arranged according to the number severally attributed to them, that intemperance, the hydra of modern days, is, apparently, the most productive of the disorder in question.

a *Physical Causes.* Intemperance 146; "various bodily diseases" 103; constitutional 57; onanism 55; hereditary 40; puerperal 36; typhus fever 10; repelled eruptions 9; blow on the head 7; parturition 6; structural lesion of the brain 5; excessive physical exertion 4; injuries 3; epilepsy 3; insolation 2; injury of nervous centre by falls 2; inflammation of brain 2; "change from ordinary to vegetable and abstemious diet" 2; erythema of the brain 1; malformation 1; menorrhagea 1; suppressed menses 1; total 496.

Hydrocephalus, vertigo, headache, metallic fumes, inanition, inordinate sexual gratification, severe pain, extremes in heat and cold, worms, dropsy, consumption, and the suppression of any natural or habitual discharge, may be included in this class of causes.

b *Moral Causes.*—Religious matters 70; domestic trouble 60; loss of property and perplexity in business 56; loss of friends 46; mental application 34; disappointed affection 28; disappointed ambition 11; "disappointment" 11; indulgence of temper 8; care and anxiety 7; jealousy 5; austere parental government 4; fright 2; mortified pride

1; "agitation on the approach of matrimony" 1; "metaphysical hair-splitting" 1; "predisposition excited by novel-reading" 1; total 346. —Physical causes 496; moral causes 346; various causes, both physical and moral 73; unknown causes 220; total 1135.

Among the moral causes unenumerated, but mentioned by different authors, are avarice, joy, terror, anger, shame, guilt, defamation, calumny, ridicule, "absence from native country, loss of liberty, loss of beauty, love of praise, gaming, and 'the complete gratification of every wish of the heart.'"

It is generally believed that a greater number become insane from *moral* than from *physical* causes. It may be the case, (although it must, at present, be considered doubtful,) and if, in the foregoing list, the causes of the 220 cases "unknown," could have been ascertained, perhaps the majority would have been reversed. It is extremely difficult, nay, absolutely impossible, as the reports fully indicate, for the superintendents of lunatic hospitals to ascertain either the proximate or the immediate causes of the diseases of many of their patients. In some cases it is unknown by the friends of the individual; while, in various others, although known, a concealment is induced from motives of friendship or of consanguinity.

At the M'Lean Asylum, "hereditary predisposition, pregnancy, parturition and lactation, and onanism," are considered the most prominent causes. During the residence of Dr. Waters in the Pennsylvania Hospital, *one-third* of the cases of insanity received were produced by intemperance. Dr. Rush considered that the study of the mechanic and other arts, is more liable to induce insanity than that of the sciences. Among those who have suffered from similar studies, have been many who have followed, with a zeal worthy of a better cause, that "shadow of a shade," the utopian perpetual-motion. It is said that instances of insane priests, artists, sculptors, poets and musicians are numerous, whereas *no case* is known to have occurred among naturalists, geometricians and chemists. I know not whether this is the case in the United States. Religious doubt and excitement are fertile of the disease; but, that an abandonment of all religious belief would reduce the number of lunatics, appears to have been disproved by the observations of M. Esquirol.

It is a fact worthy of notice, that in barbarous and savage nations, insanity is but little known. The Baron Von Humboldt found but few cases among the aborigines of America. In China, Russia, and Turkey, the malady is rare. M. Desgenettes found, in the hospital of Grand Cairo, Egypt, a city of 300,000 inhabitants, but fourteen afflicted with disorders of the brain and nervous system. Whether

the differences thus observed in different nations, are to be attributed to the different extent to which the people are exposed to the *moral* causes of this disease, is left for demonstration.

Duration.—The duration of insanity varies from a few days, in one extreme, to forty, fifty, and even sixty years in the other. The average time is said to be about thirteen and a half years, but it cannot fail of being materially diminished by the modern enlightened mode of treatment. Individual cases may, perchance, be even prolonged; not, however, by any injury arising from the treatment, but from a mitigation in the severity of the disease by which the day of death is postponed. In a memoir presented to the French Institute, M. Pinel states that more are cured during the first month of the disease than in any one of the succeeding, and that the average duration of those that are cured is from five to six months. M. Esquirol and S. Tuke, give a longer period as the mean time of continuation. The former says, that of 2,005 females admitted at the Salpêtrière, Paris, the greatest number of cures was effected in the first two years, and that the average was "somewhat short of a year." The probability of a recovery after the *third* year, is considered as about one to thirty. "I have constantly observed," says Dr. Prichard, "that in the course of the *first month*, a very marked remission takes place" in the disease. He supposes that at this time the acute form of the disease is exchanged for the chronic.

From these statements we may infer that, if uncomplicated with any other functional disease, and unaccompanied by an organic lesion of the brain, the natural period of acute mania is brief.

Termination.—Insanity terminates in a restoration to health, in *fatuity*, or in *death*.

1st. *Recoveries.*—The proportion of cures varies according to the age and sex of the patients, the cause of the disease, the disorders with which it may be complicated, the treatment, &c. &c. The probability of recovery is greater in young than in old people. According to M. Esquirol, few recover who are more than sixty years of age. The following table, showing the ratio of cures in several hospitals, is abridged from the author just mentioned.

HOSPITALS IN ENGLAND.	Admissions.	Cures.	HOSPITALS IN FRANCE.	Admissions.	Cures.
Bethlehem	9296	2761	Charenton	596	194
St. Luke's	6458	2811	Salpêtrière	4429	2324
York Asylum	599	286	Esquirol's private	335	173
Retreat, York	163	60			
Total	16516	5918 =3.57+per ct.	Total	5360	2691 =50.2+per ct.

From these statistics M. Esquirol infers that the proportion of cures is greater in France than in England, an inference the truth of which Dr. Burrows denies.

The following table, exhibiting the per centage, &c., of cures in various hospitals, is compiled from the statements of Dr. Burrows, the reports of the hospitals in the United States, and several other sources.

HOSPITALS.	Time.	Admissions.	Cures.	Per centage.
Asylum, New York	26 years.	1584	700	44.19
Bloomingdale, New York .	14 "	1777	770	43.
Pennsylvania	80 "	3718	1289	34,66
Frankford, Pennsylvania .	8 "	158	53	33.54
Retreat, Connecticut . . .		516	292	58.
Lunatic, Worcester, Mass. .		385	142	36.88
Salpêtrière and Bicétre, Paris	20 "	12592	4968	30. nearly
Salpêtrière	9 "	2804	1233	44.
Parisian	3 "	2325	865	37.25
Cork Lunatic Asylum, Ireland	20 "	1431	751	52.49
Lancaster, England . . .	10 "	812	322	39.
Wakefield, " . . .	10 "	917	384	42.
Stafford " . . .		1000	429	43.
Average				41.38

To this may be added the following, in which the time and the per centage of cures alone are given.

HOSPITALS.	Time.	Per cent.	HOSPITALS.	Time.	Per cent.
St. Luke's, England	19 years.	46.	Four German . .		31.
Bethlehem . . .	3 "	54.	Bloomingdale, N. Y.	8 years.	46.
Three British .	10 "	41.25	Retreat, Connecticut		51.
Thirteen British		33.	M'Lean Asylum, Mass.	10 "	41.33
Charenton, France	3 "	33.			
Five French . .		43.			

Average of the first table . . . . 41.38 per cent.
" " second table . . . 40.84 "
" " two . . . . 41.06 "

It was left for the physicians of the present age to demonstrate, that as great a proportion of patients suffering under acute mania may be cured as of those of any other acute disease. This has been satisfactorily proved. A great remissness, however, exists upon the part of the friends of this unfortunate class of the community, in neglecting to place them in a hospital during the earliest stages of the malady. "It frequently happens," says the eighteenth report of the Asylum at Frankford, Pennsylvania, "that applications for admission into our Asylum are not made until after the most promising period

for recovery has elapsed." Similar complaints are urged in the reports of other hospitals.

The following table exhibits the advantage of early treatment.

HOSPITALS.	Time	RECENT CASES. No. of cases	Died	Stationary	Improved	Much improv'd	Convalescing	Cured	Number under curative treatment	Per centage of cures	CHRONIC CASES. No. of cases	Died	Stationary	Improved	Much improv'd	Convalescing.	Cured	Number under curative treatment	Per centage of cures
Retreat, Conn.	1st year	12	–	1	1	2	2	6	—	50.	32	1	10	8	13	–	-	—	—
	2nd "	28	–	1	–	2	–	25	—	39.28	34	–	17	7	6	–	4	—	11.76
	3d "	28	1	6	–	–	–	21	23	91.6	30	3	17	7	–	–	3	10	30.
	4th "	25	–	3	–	–	–	22	24	91.6	42	2	21	7	7	–	5	19	31.
	5th "	26	–	2	2	–	–	22	24	91.6	42	–	25	5	2	5	5	19	26.3
	6th "	27	–	3	–	1	1	22	24	91.66	45	–	23	4	12	–	6	23	26.
Frankford	1st "	27	4	1	2	4	–	16	—	69.56	51	6	29	5	5	–	6	—	13.33
	2nd "	22	3	3	3	5	–	8	—	42.09	—	4	38	7	5	–	10	—	10.66

In estimating the per centage in the cases at Frankford, the deaths are rejected, in order to bring them, as nearly as possible, to an equality with those of the Connecticut Retreat. The average per centage of cures in the recent cases is 77.17, while that of the chronic cases is but 18.5. The following table, less minute than the last, is intended for the same purpose.

HOSPITALS.	RECENT CASES. Number	Cured	Per cent.	CHRONIC CASES. Number	Cured	Per cent.
Bloomingdale, New York	581	341	58.96	422	76	18.
Retreat, Connecticut	263	230	90.9	253	62	27.3
Massachusetts Lunatic, Worcester	—	—	80.5	—	—	27.
Retreat, York, England	92	65	70.65	161	47	29.19
Dr. Burrows, private	242	221	91.32	54	19	35.18
Glasgow	—	—	50.	—	—	13.

By the inspection of these tables, it will be perceived that the per centage in recent cases varies from 50 to 91.66, and that in the chronic from 13 to 35.18 per cent. The average of that of the former, in the latter table, is 73.72, and of the latter 24.94 per cent. The average of cures in recent cases in both tables, taken together, is 75.445 per cent., and that of chronic cases 21.72 per cent.

Most recoveries are complete; some, however, are but apparently so, the patient remaining in a state in which he is very liable to a relapse if exposed to exciting causes. In many instances of the perfect recovery of physical health and energy, the individuals are incapable of sustaining their former intellectual rank. Diseases of the nervous

system are peculiarly liable to relapses. When the integrity of this dynamic *apparatus* has been destroyed, it is restored with more difficulty than is that of any of the other systems of organs in the human economy. Pinel and Desportes state the proportion of relapses at one-sixth the number of original cases; at the Salpêtrière it was one-seventh.

Fatuity.—The state of patients whose disease has had this unfortunate termination, is different from that of idiots, or of those who are in the imbecility sometimes attendant upon old age. Dr. Prichard divides fatuity into two grades, 1st, Dementia, and 2nd, Amentia.

1st. Dementia. This is the "*démence*" of M. Esquirol and Georget, and is that state in which the physical and mental powers have become overpowered or exhausted by the force of the disease. From an intense excitement the patient relaxes into a state of quietude, ominous of a decay of mental vigour; memory is obliterated, the patient becomes inactive, thoughtless, unobserving, and perhaps utters

"A hollow laugh or melancholy song"—

the former a painful evidence of mental vacuity and imbecility, the latter, as it were, a requiem over the departed *powers* of that spirit which alone elevates man above "the brutes that perish." Some appear to recollect their friends, but all affection for them is annihilated. Some are capable of performing light manual labour, others are not. Physical health is generally good, digestion and assimilation being unimpaired. A few instances of recovery are on record.

2nd. Amentia. We have here arrived at the most abject state of mental imbecility. Reason, entirely dethroned, has left no trace of her once having occupied the palace which she has deserted. Man, "the lord of the universe," entirely divested of his mental and moral energies, becomes a mere vital automaton, moving by the force of its organic life, and directed by the capricious impulse of the moment. Many patients in this state remain motionless, perchance, during the day, their eyes fixed upon the ground, as if unconscious of the things or persons around them, or even of their own existence. They would not *retire to bed nor rise* were they not forced to do it by their attendants.

3d. Death. "Madness," says Prichard, "cannot be reckoned among the diseases which are very dangerous to life." But if, as he declares in another place, "lunatics are subject, *in a much greater proportion than other people*, to apoplexy, paralysis, epilepsy, and all the train of symptoms depending on different degrees of cerebral congestion;" if, as is the fact, acute insanity produces great exhaustion and prostra-

tion of physical energy, and if "diseases of the thoracic and abdominal viscera, and a cachectic or scorbutic state of the system" be its sequelæ, then must he, and every other person, acknowledge that if not "*very*," it is *somewhat* "dangerous to life." The following table exhibits the ratio of deaths to the number of patients in several hospitals.

HOSPITALS.	Cases.	Died.	Ratio.
New York	1584	153	1 in $10\frac{1}{2}$
Bloomingdale, New York . . .	1774	136	1 in 13 1-14
Pennsylvania	3487	526	1 in $6\frac{1}{2}$
Frankford, Pennsylvania . . .	158	21	1 in $7\frac{1}{2}$
Retreat, Connecticut	196	8	1 in $24\frac{1}{2}$
" "	247	8	1 in $30\frac{7}{8}$
State Asylum, Kentucky . . .	502	190	1 in $2\frac{2}{3}$
Wakefield, England			1 in 4
Lancaster, "			1 in 4
York, "			1 in 9
Manchester, "			1 in 9
Nottingham, "			1 in 8
Retreat, York, "			1 in 5
Cork, Ireland			1 in 3
Glasgow, Scotland			1 in 5
Geneva, Italy			1 in 23
Parisian			1 in 13
All French			1 in 4 6-11
All British			1 in 4 1-6
Aversa, Italy			1 in 4
Massachusetts Lunatic, Worcester			1 in 18

The average proportion of deaths as represented by this table, is 1 in $9\frac{968}{1000}$. Among the immediate causes of death, other than mania itself, the following diseases are reported as being the most numerous, viz: apoplexy, paralysis, epilepsy, phrenitis, convulsions, tumour of the brain, phthisis pulmonalis, pneumonia, hydrothorax, gastritis, diarrhœa, typhus fever, and marasmus. It is evident that the insane are equally liable with others to attacks of most of the disorders to which mankind are subject.

Treatment. The treatment of insanity is divided into 1st, medical, and 2nd, moral. Of the first we shall say nothing, our object being, chiefly, to bring together some of the facts relating to hospitals, and to the *moral treatment* of their inmates.

Among the many benevolent institutions which have originated as almost legitimate consequences of superior civilization, more extensive and widely-diffused knowledge, and a more enlightened philanthropy, not the least conspicuous are those which have for their object the amelioration of the sufferings of the insane. Formerly the unfortunate victim to maniacal hallucination was supposed to have infringed upon the laws of Heaven, and thus incurred the displeasure

of a Creator, the phials of whose wrath were consequently poured out, in this form, upon the offender. But the sentiments of the community have changed. The lunatic is no longer "a reproach and a bye-word," his family are no longer shunned as being partially implicated in his unknown offence; but, as a sufferer under one of the most afflicting maladies to which our race is subject, the former receives that kindness and attention which the human heart, alive to the sufferings of our fellows, so well knows how to bestow, while the latter partakes of the fountain of sympathy gushing from a thousand bosoms. The sufferings to which maniacs were formerly subjected, sufferings which placed recovery beyond hope, their imprisonment and confinement in dungeons, their tortures under manacles and chains, their deprivation of food, of clothing, and of all the comforts of life, were such that we are almost struck with horror at their recital. The noble philanthropist, M. Pinel, to whose untiring exertions the lunatics of France are indebted for an amelioration of their condition, has given a thrilling description of the vast accumulation of misery, which, during his investigations, was presented to his view. In England and Scotland, although some hospitals existed, the misery and inhumanity, were, according to Halliday, previously to 1815, equally great. In "Bedlam," or Bethlehem Hospital, in London, at that time, the patients, "as wild beasts, were shown for six-pence for each person admitted."

A fundamental error formerly existed with regard to the nature of insanity; it was believed that the mind is itself diseased, instead of the organ through which it is manifested. But disease is the minister of death, and the mind, a scintillation from the fire of Heaven, being free from the power of the latter, is consequently exempted from the encroachments of the former. It is, therefore, now acknowledged that insanity is produced by a cerebral lesion, and that, too, generally, of a functional nature; it necessarily follows that the disease is within the reach of remedial agents. But chains and a dungeon are miserable prescriptions to a pathological state of the most delicate organ of the human frame, an organ which is called constantly into action by an invisible, but powerful and controlling agency. Experience has fully attested this fact. It has also proved that mild and gentle means, pleasing amusements, light labour, and affectionate treatment, by those around the patient, are powerful auxiliaries in promoting a cure. Since this has been demonstrated, the number of lunatic asylums has greatly increased, for in those institutions the system of treatment can be more completely adopted than in most private families. England, Scotland, Ireland, and most of the coun-

tries of continental Europe, are supplied to a greater or less extent, with these benevolent institutions, and, although in the three countries specified, as well as in France, much attention has been devoted to the subject, yet Halliday remarks, "I know of no country in the world where more attention has been paid to the comfort of these unhappy beings (the insane) than the kingdom of the Netherlands."* In Prussia also, the same author says that "the hospitals are in the very best order." Subsequently, he mentions fifteen institutions of the kind in Southern Asia. Our country has caught the spirit, and is imitating the good example of her transatlantic sisters. Already we have no less than eight lunatic asylums in operation. In these, or in such of them as are of the most approved construction, the patients are classified according to the degree of their mental alienation, thus making three divisions, 1st, those in whom the disease is violent and unabated; 2nd, the milder and the convalescing; and 3d, the convalescent. The individuals of each class occupy a suite of rooms communicating with each other by a common hall, and also with a yard in which they are permitted to exercise at suitable hours. The different classes have no communication with each other. The patients are treated medically whenever such treatment is necessary; but, as in the European asylums, the management of all cases, indiscriminately, in this manner, has been abolished. The physician now endeavours "to combine moral and medical treatment, founded on the principles of mental philosophy and physiology."† Hence, in most cases, a simple, but wholesome and nutritious diet has supplanted the long category of medicines which have sometimes been employed. It has been stated above that labour and amusements have been resorted to as the promoters of health. Let us refer more particularly to these.

Labour.—"Idleness," says one of the reports of the M'Lean Asylum, Massachusetts, "is the greatest evil against which we have to contend. Useful labour is always the best employment." Hence the males who are able to work are furnished, at that asylum, with employment in gardening, and various kinds of light manual labour; and the females knit, sew, and perform many domestic duties. Once a week, those females who are sufficiently well, spend an afternoon together, sewing, while some one reads to them. Refreshments of a suitable kind are furnished at these "parties." "We have seen," says the report before mentioned, "the very best results from labour.

* "A general view of the State of Lunatics and Lunatic Asylums in Great Britain and Ireland, and in some other kingdoms. By Sir Andrew Halliday, M. D., and K. H."

† Third Annual Report of the Retreat for the Insane, Hartford, Conn., 1827.

Patients who, without it, were noisy and troublesome, have become quiet with it. One patient, who was brought to the institution in irons, and who, until employed, was constantly raving and excited, when furnished with occupation became quiet." At the Pennsylvania Hospital also the patients are employed; the males weave tape, prepare carpet yarn, make mattrasses, supply fuel, keep the yards and areas in order, &c.; and the females spin, sew, knit, &c., &c. At the Massachusetts State Lunatic Hospital in 1835, of 119 patients 50 were capable of doing profitable labour, such as knitting, sewing, sawing wood, gardening, &c. "As employment," says Halliday, speaking of the treatment of patients at the Armagh Asylum, Ireland, "is now generally allowed to be the best restorative, every means has been used to promote it. Such as are at all capable among the females, are constantly employed in plain work, spinning, &c., and the division in which this is going on *is remarkable for its regularity and cheerfulness*." No *compulsion* to labour is resorted to. But perhaps the Middlesex County Lunatic Asylum, at Hanwell, in England, furnishes the best example of the extent to which labour may be carried. At the time when I visited that institution, during the last summer, it contained about 600 patients, more than 400 of whom were engaged in useful employments. In the hospitals of the continent of Europe the patients are also usefully occupied. In a work published in this city (Paris), about a year since, we are informed that, "á la ferme dé la santé, prés Bicêtre, les aliénés convalescens ont exécuté, cette année, des mouvemens de terre considérables; ìls se sont livrés, avec plaisir, à la culture, et ils ont mit en pleine activitè unê blanchisserie de toile à Bicêtre même; plus de cent cinquante aliénés sont occupés à des ouvrages de terrasse, de maçonnerie, de culture de badigeonnage, de menuiserie, et même de charpente."* "The employment," says S. Tuke, "should, as far as it is practicable, be adapted to their (the patients) previous habits, inclinations and capacities." He prefers those in which the individuals will excel, and the *useful* rather than the *amusing*, as affording to the patient "a calm feeling of satisfaction." "It is related," says the same writer, "of an institution in Spain, which accommodated all ranks, and in which the lower classes were usually employed, that a great proportion of these recovered, while the number of the grandees (that recovered) was exceedingly small."

Amusements of a suitable character are acknowledged to be efficacious adjuvants in restoring the excited minds of maniacs to their

* Memoire pour l'établishment d'un hospice d'aliénés par M. Brierre de Boismont.

original calmness. At the Pennsylvania Hospital, chess, draughts, and musical instruments, are permitted; at the M'Lean Asylum, bowling, quoits, throwing the ring, backgammon, and various other games. Similar amusements are allowed at the other hospitals in the United States. At the York Asylum in England, which I visited last summer, I perceived that billiards and cards are permitted. It is the only institution of the kind at which I have seen either of these games, or heard of them, although they may have been introduced into many others. Such patients as are in a suitable state, are, at most of the hospitals, occasionally indulged in a ride. Newspapers and books are found to furnish useful entertainment to them.

Religious Worship.—In some of the asylums, attendance at meetings for Divine worship, has had a beneficial effect upon the patients. "It is regarded as a privilege, and as such is eagerly sought for. Patients who could not otherwise be kept decently clothed, have exerted their powers of self-control, to be allowed to attend;" and "in no instance has there been any disturbance, nor have we known any injurious effect."—[*Report of the M'Lean Asylum.*]

Attendants.—It is of the utmost importance that the attendants upon the insane be of mild, gentle, benevolent, and sympathizing dispositions. At the Pennsylvania Hospital if an attendant is known to strike, or otherwise abuse a patient, he is *immediately dismissed.* At the M'Lean Asylum, "no one is permitted to strike a patient, *even in self-defence;*" and one of the regulations of the Connecticut Retreat is, "*In no possible case* must an attendant strike a patient; if a blow be received *it must never be returned.*" At the M'Lean Asylum there is an attendant to every six patients. No patient of a suicidal propensity is left alone. "We will not," says the report before quoted, "continue any male or female attendant whom we cannot invite into our family, seat at our table, and with whom we could not confidently place our wives, sisters, and brothers."

Punishments.—The straight-jacket, manacles and chains, have nearly been abandoned in the treatment of lunatics. The first, however, is still used occasionally in some of the British asylums, and, I believe, is not entirely abandoned in some of those of the United States. A change of location, the deprivation of a privilege, the shower bath, and other punishments comparatively mild, are often sufficiently effective. In the Connecticut Retreat, as says one of the reports of that institution, "in case coercion and confinement become necessary, it is impressed upon his (the patient's) mind, that this is not done for the purpose of punishment, but for his own safety and that of his keepers." "In no case," says the same report, "is decep-

tion of the patient employed or allowed; on the contrary, the greatest frankness as well as kindness, forms a part of the moral treatment. His case is explained to him, and he is made to understand, as far as possible, the reasons why the treatment to which he is subjected has become necessary. By this course of intellectual management, it has been found, as a matter of experience, at our institution, that patients who had always been raving when confined without being told the reason, and refractory when commanded, instead of being entreated, soon became peaceful and docile." Sir A. Halliday insists upon the necessity of honourable and candid dealing with the insane, and urges the importance of the fact, that they are generally, if not universally, affected by kindness, while they never forget injuries, insults, duplicity, or imposition. An appeal to the sympathies of the most maniacal patients, while, at the same time, a negative assent is given to their particular hallucination, is sometimes more effective than punishment. An interesting instance of this kind is related by the late Dr. Rush, of a lunatic in the Pennsylvania Hospital. This patient having frequently attempted to set fire to the building, was expostulated with by the superintendent, or physician, who endeavoured to impress upon his mind the effects of a conflagration, such as he had attempted. "But I am a salamander," said he, (I know not that I quote the *words* of the author,) "and consequently cannot be burned." "Recollect, however," answered the gentleman expostulating with him, "that although you are a salamander, the other people in the house are not." This sagacious reply had the desired effect; the patient desisted from his incendiary attempts.

Previously to closing this article, we may say that, although many interesting facts are found in the reports of our lunatic asylums, many from which important conclusions may be derived, yet, in some respects, they are unsatisfactory and inconclusive. If a *common formula for the statistical part of the reports* could be adopted by all the asylums, this objection would be removed, and our knowledge of the disease, of its causes, duration, curability, &c., would be more rapidly advanced.

It will appear that some of the asylums suffer in this tabular approximation of their statistics. This difference is more *apparent* than *real.* It arises from two sources; firstly, from the difference in the character of the institutions themselves; and, secondly, from the diversity in the methods of collecting similar statistics. Some of the asylums are purposely intended for paupers, and, consequently, are compelled to admit *every* applicant of that class, of what age, grade, or condition soever he may be. Others, by their regulations, restrict

their admissions to those of a certain character. Of the former description are the Massachusetts State Lunatic Hospital, at Worcester, and the State Lunatic Asylum of Kentucky, and of the latter most of the others in the United States. Some, however, are more restricted than others. The same difference exists in Europe. The St. Luke's and Bethlehem Hospitals, of London, reject all persons "who have been insane more than a year, those affected by paralysis and epilepsy, and the aged and feeble." The Retreat near York rejects idiots and "those of a low grade of mental dilapidation."

Again, in making out their reports, the European institutions *reject the incurables* when estimating the per centage of cures; the same is true of the retreat at Hartford. Moreover, at the last mentioned asylum, no case is included in that estimate which has not been six months upon trial; while in some of the others, it is necessary to include every patient, even those who may have been received on the day on which the report is made.

Paris, 4*th Mo.* 12*th*, 1838.

ART. V. *Statistical account of the cases of Amputation performed at the Pennsylvania Hospital from January* 1*st*, 1831, *to January* 1*st*, 1838. By GEORGE W. NORRIS, M. D., one of the Surgeons.

In a large hospital no operation is more frequently called for than that of amputation, and even where the time for doing it is judiciously determined, and the operation itself dexterously and well performed, the dangers to which the patient is afterwards exposed, are so great as to render the subject worthy of all attention from the practical surgeon. Contrary to the opinion generally prevalent in this country, amputation, even under favourable circumstances, is very frequently followed by fatal results in civil hospitals. In the practice of the Hôtel Dieu, of Paris, it is said that not more than half of the cases prove successful,* and I have the authority of M. Hache, a former interne of the hospital of St. Louis, of the same city, for stating, that out of twenty successive amputations made in the year 1833, in that institution, twelve died. With one exception, (that of a toe,) all these were capital amputations, and at the time the statement was made some of the patients were remaining still uncured. Nor ought this great mortality to surprise us when all the dangers to which am-

* Gazette des Hôpitaux, 1834.

putation exposes, are maturely considered. The cutting off of a considerable part of the body destroys that equilibrium in the circulation of the blood and distribution of nervous influence, which is necessary to the healthy performance of the different functions, and must strongly predispose to, if it does not actually produce, inflammation of the thoracic or abdominal viscera; at the same time that the division of numerous veins, and the exposure of a large surface that in most cases takes on a suppurative action in at least a part of its extent, gives rise to that most common of all lesions in fatal cases, the formation of purulent depots in the principal internal organs.

At the Pennsylvania Hospital, as will be seen in the accompanying table, our success after amputation is not great. We shall briefly state the circumstances under which the operation is generally performed, the parts removed, mode of dressing, &c., in order that a fair comparison of our success may be made with that obtained in other similar institutions. The surgical division of the hospital is under the care of three practitioners, who attend in rotation each four months, and in all cases where an operation is deemed necessary, a consultation is previously held, and the full consent of the patient obtained. Most of the patients who suffered amputation for other than recent injuries, although labouring under diseases which were generally of long standing at the date of admission, were not operated upon until after they had remained a considerable length of time in the house.

The endeavours that have been constantly made for many years past, to save limbs under almost desperate circumstances, both in cases of chronic disease and recent injuries, has imperceptibly produced a great degree of unwillingness with us to the performance of amputation. In most, if not all of our cases, other than those in which it is required immediately on admission, it is long deferred, and hence is done under circumstances not so favourable to recovery as if performed at an earlier period. In caries of the knee, ankle, or wrist, affections which constitute the majority of chronic diseases calling for amputation, a cure is often attempted by means of perfect rest, attention to the general health, and alteratives, even when these joints are opened, and the bones completely softened. In other chronic diseases too, the same practice is carried very far in the attempt to save the limb; the operation not being done until repeated attacks of erysipelas, diarrhœa, heavy sweats, and wasting of the patient, make it the only chance of rescuing him from a certain and immediate death.

In compound fractures, or severely lacerated or comminuted limbs,

efforts are made to save them so long as even a bare possibility of success exists, and in many of these cases the patient afterwards either sinks too low to permit of amputation, or else has it done when large sloughs are being thrown off and joints opened, when gangrene is either threatened or has actually come on, or when the strength of the patient is exhausted by profuse suppuration or secondary hemorrhages, and his mind cast down from finding resort to an operation at last necessary, notwithstanding all the pains endured, and increased risks encountered in the attempt to avoid it. It is true that wonderful recoveries do sometimes take place in both classes of cases under the circumstances mentioned. We have witnessed them, particularly after complicated fractures. They are, however, exceptional cases, and we question whether the occasional success thus had, has not been procured at a considerable expense of life, by inducing a too long perseverance in efforts to save limbs in other almost desperate instances.

In thus stating our opinion of the past practice of the hospital on this point, we do not wish to be understood as advocating the sacrifice of limbs in all cases in which *some* risk is to be encountered in attempts to save them, but only to express our conviction that the practice pursued there is in this respect rather *ultra*. The first object of the surgeon is to save life, and the advantage sometimes gained of curing an apparently desperate case, though it may give reputation to an institution, and deserved eclat to a surgeon, is not, we think, sufficient to balance a single life lost in endeavours to add to a list of patients saved under such circumstances. I regret my inability to give the number of deaths which have occurred after accidents in cases where it became a question whether or not an attempt should be made to save the limb, and in which this practice was adopted. The mode in which the books of the hospital are kept precludes the possibility of getting such information from them, but for two years past I have carefully noted such cases, and shall at a future time make known the results. It is a common belief that many limbs are here cured, after severe injuries, which in most other hospitals would be amputated. No positive proof can be offered to support this opinion, though my own impressions, received from an internship of nearly three years in our hospital, and a subsequent residence in Paris of two years, with my attention directed particularly to the subject, leads me to think the statement correct, at least so far as regards the great hospitals of that city. Many limbs are saved in Philadelphia, both in chronic diseases and after injuries, that in Paris would, without hesitation, be amputated. In making this statement,

lo not in any way wish to censure the practice, or undervalue the rgery of that capital; various causes may require amputation for the re of diseased or badly fractured limbs there, which same cases ould do well here without it; a better class of patients, more vigor-s constitutions, a less crowded state of wards, and better diet, are l circumstances greatly in our favour.

In the following tables, under the head of immediate amputations, e included all those in which the operation was performed within venty-four hours after admission, the patient in such cases having een brought to the house immediately after the receipt of his injury. Vith a very few exceptions, the common circular amputation was erformed, and the stumps were invariably dressed so as to procure nion by the first intention. The ordinary mode of dressing is first bring the flaps together by means of three or four long strips of lhesive plaster, and after covering the lips of the wound with lint read with cerate, to apply a small cushion of tow over the extremity the stump, and to secure the whole with a roller moderately tight. s a general rule, the first dressing is made on the third or fourth ay, and repeated daily afterwards till cicatrization is complete. orsion was in no instance resorted to for the suppression of hemor-age. Ordinarily, opium was freely given, and a moderately good et, easy of digestion, is allowed before, and soon after the operation, nless inflammatory symptoms arise. In no instance was there suffi-ent hemorrhage from the stump, after the operation, to require the emoval of the dressings. All vessels are taken up that give out ood, even when very small, and the dressings are applied to the ump before the removal of the patient from the amphitheatre, which generally done in ten or fifteen minutes after the operation is finish-l. In none of the operations that I have ever witnessed has the tempt at immediate reunion obtained a full and complete success. ot unfrequently I have seen a part of the wound united at the first ressing; but in all these cases there has always been a portion of it, her than that at which the ligatures pass out, which has suppurated. n two or three instances, I have known the edges of the skin form-g the flap, completely adherent, without being in any degree attach-l to the bottom of the wound, so that the pus secreted has had no utlet, and the end of the stump has been soft and fluctuating, pre-enting all the appearances of an abscess.

No.	Admission.	Name.	Age.	Disease or Injury.	Part Amputated.	Immediate or otherwise.	Result.	Period of Discharge or Death.
	1830.							
1	May 7	Michael Boyle	29	Inflammation of the Knee.	Thigh.		Cured.	April 29, 1831.
2	May 24	John Pratt	18	Malignant Tumour.	Shoulder Joint.		Cured.	August 17, 1830.
3	Nov. 5	William Carson	21	Diseased Leg.	Thigh.		Cured.	February 9, 1831.
4	Dec. 18	Horace N. Banks	25	Fracture of the Humerus.	Arm.		Cured.	April 6, 1831.
	1831.							
5	Jan. 22	Jacob Hansen	33	Frosted.	Hand.		Cured.	September 17, 1831.
6	Feb. 28	George Lewis, C*	21	Sprain.	Thigh.		Cured.	May 21, 1831.
7	Aug. 5	Geo. Alexander, C	45	Compound Fracture of Leg.	Leg.		Cured.	June 6, 1832.
8	Sept. 26	Wm. Summerill	30	Dislocated Astragalus.	Leg.		Died.	April 5, 1833.
9	Nov. 14	Charles Wilson	27	Ulcer of the Leg.	Leg.		Cured.	March 24, 1832.
10	Dec. 12	John Haines	33	Frosted Hand.	Hand.		Cured.	May 23, 1832.
11	Dec. 13	Thomas Mullin	39	Compound Fracture of Fore-arm.	Fore-arm.	Immediate.	Cured.	February 13, 1832.
	1832.							
12	May 9	Eli Greger	28	Fractured Arm and Lacerated Hand.	Fore-arm.		Died.	June 17, 1832.
13	July 4	William H. Nutt	34	Lacerated Hand and Arm.	Arm.	Immediate.	Died.	July 7, 1832.
14	Oct. 3	Joshua Price	35	Compound Fracture of Leg.	Leg.	Immediate.	Cured.	February 20, 1833.
15	Oct. 6	Barney Sweeney	35	Compound Fracture of Leg.	Leg.		Died.	November 12, 1832.
16	Nov. 1	Joseph Mills	16	Lacerated Arm.	Arm.	Immediate.	Cured.	February 14, 1833.
17	Nov. 23	William Thomas	22	Lacerated Fore-arm.	Fore-arm.	Immediate.	Cured.	March 8, 1833.
18	Dec. 31	Jona. Cameron	34	Lacerated Wound of Hand.	Fore-arm.	Immediate.	Cured.	February 6, 1833.
	1833.							
19	Feb. 2	Edward Roberts	38	Gun-shot Wound of Hand.	Fore-arm.	Immediate.	Died.	February 3, 1833.
20	May 11	Charles Long	13	Comp. Fract. and Lacerated Fore-arm.	Fore-arm.	Immediate.	Cured.	July 6, 1833.
21	May 25	André Thévenin	18	Lacerated Hand and Arm.	Fore-arm.	Immediate.	Cured.	July 15, 1833.
22	June 3	William M'Ginnis	43	Compound Fracture of Leg.	Thigh.	Immediate.	Cured.	September 21, 1833.
23	June 3	John Connelly	40	Compound Fracture of Leg.	Thigh.	Immediate.	Died.	June 23, 1833.
24	June 22	Patrick Scullens	25	Compound Fracture of Elbow.	Arm.	Immediate.	Died.	June 25, 1833.
25	Sept. 23	William Causey	35	Compound Fracture of Leg.	Leg.		Died.	October 9, 1833.
	1834.							
26	March 19	Robert Robertson	11	Lacerated Fore-arm.	Fore-arm.	Immediate.	Cured.	May 11, 1834.
27	March 21	Revel Bibbins, C	25	Compound Fracture of Leg.	Leg.		Died.	April 15, 1834.

28	April 19	Charles Thomson	34	Inflammation of Knee Joint.	Thigh.		Died.	May 29, 1834.
29	April 23	William Taylor, C	31	Ulcers on the Leg.	Leg.		Died.	May 10, 1834.
30	July 14	James Fitzsimmons	22	Lacerated Wound of Ankle Joint.	Leg.		Died.	July 27, 1834.
31	Nov. 7	John Barnes	39	Lacerated Hand and Arm.	Arm.	Immediate.	Cured.	December 13, 1834.
32	Dec. 10	William Lindsay	20	Diseased Wrist.	Fore-arm.		Cured.	April 11, 1835.
33	Dec. 13	Henry Mivelaz	32	Diseased Knee Joint.	Thigh.		Cured.	May 6, 1835.
	1835.							
34	April 12	Andrew Murray	35	Wounded Hand.	Fore-arm.		Cured.	July 4, 1835.
35	April 25	Charles Berry	45	Ulcers of the Leg.	Leg.		Died.	June 20, 1835.
36	May 12	Ann Doan	18	Diseased Stump.	Leg.		Cured.	June 4, 1835.
37	May 21	Patrick Lafferty	26	Compound Fracture of Leg.	Leg.		Died.	June 6, 1835.
38	June 24	John Storey	17	Lacerated Arm.	Fore-arm.	Immediate.	Cured.	August 13, 1835.
39	August 23	Martin Maloney	17	Gun-shot Wound of Leg.	Leg.	Immediate.	Died.	September 4, 1835.
40	Sept. 6	Joseph Freer	23	Comp. Fracture of Thigh, (gun-shot.)	Thigh.	Immediate.	Died.	September 6, 1835.
	1836.							
41	March 11	Joseph Sterrett	26	Compound Fracture of Leg.	Leg.	Immediate.	Cured.	June 25, 1836.
42	March 2	Patrick Garvin	38	Frosted Feet.	Both feet, (part'l.)		Cured.	July 6, 1836.
43	March 5	James Thomson	22	Frosted Feet.	Foot, (partial.)		Cured.	September 8, 1836.
44	June 12	Francis M'Ilhone	21	Compound Fracture of Leg.	Leg.	Immediate.	Cured.	January 25, 1837.
45	July 23	John Bush	6	Lacerated and Fractured Thigh.	Thigh.	Immediate.	Cured.	December 6, 1836.
46	July 24	Joseph Merwine	46	Lacerated Foot.	Foot, (partial.)	Immediate.	Died.	July 31, 1836.
47	Sept. 2	John Keeling	22	Ulcers and Caries.	Leg.		Cured.	April 15, 1837.
48	Dec. 9	William Cammell	47	Compound Fracture of Knee.	Thigh.	Immediate.	Died.	December 10, 1836.
	1837.							
49	Feb. 1	Thomas Dawson	41	Ulcers.	Thigh.		Died.	April 11, 1837.
50	Feb. 27	Robert Blyth	50	Thigh torn off by machinery.	Thigh.	Immediate.	Died.	February 27, 1837.
51	August 19	John Dirkin	25	Compound Fracture of Wrist.	Arm.		Cured.	November 25, 1837.
52	Sept. 9	William Porter	45	Diseased Wrist.	Fore-arm.		Cured.	November 29, 1837.
53	Oct. 10	William Hays	29	Lacerated Hand.	Fore-arm.		Cured.	November 30, 1837.
54	Oct. 24	Leah Smith, C	24	Diseased Thigh.	Thigh.		Cured.	January 10, 1838.
55	Nov. 17	Absalom Lowry, C	29	Lac. arm & comp. disl. head of humerus.	Shoulder Joint.	Immediate.	Died.	November 20, 1837.

* Coloured.

On the above 55 patients 56 amputations were performed, of which 13 were of the thigh, 16 of the leg, 4 of the feet, 2 at the shoulder joint, 6 of the arm, 13 of the fore-arm, 2 of the hand.

Of the *thirteen thighs* amputated, 7 were for chronic diseases, and of these 5 recovered and 2 died. Among the recoveries were two well-marked cases of fungus hæmatodes. One of them occurred in the person of a young man aged 21, from Bellefonte, Pennsylvania, in whom the disease was seated in the calf of the leg. The glands in the ham were much enlarged, but the patient's general health was not affected. There was no enlargement of the glands in the groin. A tumour, situated on the back part of the leg, of the size of a partridge egg, and apparently seated just beneath the skin, had been noticed by him for upwards of six years, but this never gave him any uneasiness till seven or eight weeks before entering the hospital, when, without any known cause, it increased greatly in size, and became very painful. A physician, whom he consulted, mistook the disease for a deep seated abscess, and after blistering and poulticing, had plunged a bistouri into it; nothing but dark-coloured thin blood escaped from the opening. Amputation was done in November, 1830. The stump was not entirely cicatrized till the end of the ninth week, and a year since I understood that he was still alive and enjoying excellent health. The other case occurred in a coloured woman aged 24. The disease occupied the whole circumference of the thigh in its lower two-thirds, and had existed eighteen months. The limb was amputated very high up in November of last year, and eight weeks afterwards she was discharged, cured, and at this time has all the appearances of robust health.

The 6 cases amputated in consequence of accidental injuries, all had the operation done a few hours after admission, and of these 4 died, 3 within the twenty-four hours immediately following it; the other patient lived twenty days.

Of the *sixteen legs* amputated 7 were cured and 9 died. Of these, 11 were in consequence of injuries received, and 5 were for the cure of chronic affections. Of the 11 performed after injuries, 4 were immediate, and of these 3 were cured, and 1 died eleven days after the operation. Of the other 7 cases in which the amputation was not done till some days after the receipt of the injury, in consequence of attempts being made to save the limbs, 6 died and 1 recovered. Two of the deaths were within twenty-four hours after the operation, and the other 4 occurred in less than two weeks after it. Of the 5 amputated for chronic affections, 3 were cured and 2 died, both with metastatic abscesses.

Of the 4 amputations of the feet, 3 were for mortification from frost bite, and 1 for severe laceration and fracture of the anterior part of the foot; this latter operation was immediate, and the patient died seven days after it; the three other operations, two of which were on the same patient, were successful.

Of the *two shoulder* joint operations, 1 was made necessary in consequence of accidental injury, and the patient died three days after it; the other was for fungus hæmatodes occupying the upper part of the humerus, and though the patient recovered rapidly after the operation, and left the hospital in apparent good health, yet he died eighteen months afterwards, from the same disease attacking the internal organs.

Of the *six arms* amputated, all were for bad fractures or lacerations. Four were done within twenty-four hours after the accidents, the other 2 were secondary, and were called for in consequence of the application of tight bandages to fractured limbs before entering the hospital. One of these cases was admitted in the evening twenty hours after he met with the accident, which was a simple fracture of the arm just above the condyles. On entering he complained of great pain in the whole arm and hand; the arm was enveloped in four pasteboard splints, and a very tight, but otherwise well-applied, roller, of the ordinary width, extending from the hand to the axilla. The bandage and splints were instantly removed, and the limb, which was much swollen, red, and very hot, was placed in an elevated position upon a pillow without dressings of any sort. An opiate was administered, and cloths rung out of spirits of camphor were applied to it during the night. On visiting him early on the following morning, I found that gangrene of the hand and fore-arm had taken place, and was spreading rapidly. This extended up as high as the insertion of the deltoid, when a line of demarcation was formed, and the limb was removed by Dr. Hewson. The man recovered. The other case was a compound fracture of the lower end of the radius, which happened sixty miles from the city, and was received at the hospital five days after the accident, suffering agonizing pain. A tight bandage and splints, extending from the elbow to the palm of the hand, had been applied within an hour after he met with the accident. These had not been in any way disturbed, and on removing them on admission, the soft parts over the seat of the fracture were found to have sloughed, the radius was projecting, an abscess extended up to the elbow joint, and sloughs existed over the condyles. The severe constitutional symptoms which soon followed this state of things, made it necessary to remove the arm in its middle part, after which the patient recovered.

Death took place in each of the two fatal cases, on the third day afte the operation.

Of the *thirteen fore-arms* amputated, 11 were cured and 2 died. Two were for caries of the wrist, both of which were cured; the 11 remaining were made necessary in consequence either of bad lacerated wounds, or fractures, and of these 8 were immediate and 3 not. One of the deaths occurred within twenty-four hours after the operation, and the other not till some weeks had elapsed.

In two seamen, amputation in the continuity of the metacarpal bones became necessary, on account of gangrene, produced by exposure to cold. In both cases excellent stumps were made, and the increased motion between the carpal bones and those of the fore-arm, made the parts of the hand saved of great utility to the patient.

Of the above 56 amputations on 55 patients, 24 were primary, of which 14 were cured and 10 died; 4 of the deaths occurring within the twenty-four hours immediately following it; 12 were secondary, of which 5 were cured and 7 died; 20* were for the cure of chronic affections, of which 15 were cured and 4 died; 23 of the amputations were of the upper extremity, of which 18 were cured and 5 died; 33 were of the lower extremity, of which 17 were cured and 16 died; 6 were amputations at the joints, of which 4 were cured and 2 died.

Of the 55 patients operated on,

9 were under 20 years of age,	of whom	8	were cured	and 1	died.
21 between 20 and 30	"	15	"	7	
16 between 30 and 40	"	9	"	7	
9 between 40 and 50	"	3	"	6	

From this resumé of seven years practice at the Pennsylvania Hospital, it appears,

1st. That amputation is to be regarded as an operation attended with much danger to the life of the individual.

2nd. That the chances of success after it are much greater in persons who have been for some time suffering from chronic diseases than in those who have it done whilst enjoying robust health.

3d. That amputation of the lower extremity is much more fata than that of the superior member, and

4th. That the danger increases with the age of the individual operated on.

I possess no means for comparing these results with any tabula statements of the success after amputations had in other public institutions, either in this country or in Europe, but the following hav been published by some French surgeons as the results of their indi

* One of the patients here included suffered double amputation.

vidual practice. In all of them attempts at union by the first intention, are stated to have been made.

Surgeons.	*No. of Observations.*	*Proportion of Deaths.*
Dupuytren,*	29	1 in 3
Roux,†	—	1 in 3
Hyp. Larrey,‡	57	1 in 6
Dubois,§	28	1 in 9

The unfortunate termination of amputations in France, is attributed, by their surgeons, in the generality of cases, to phlebitis and purulent absorptions. For a long period this termination was thought to be very rare in this country, but post-mortem examination has made known the existence of it in many of the deaths that took place with us, and from all the information I have been able to obtain, I am led to believe that it occurred in the majority of them.

Philadelphia, June, 1838.

Art. VI. *Cases of Disease of the Heart, with Observations.* By Edward Hallowell, M. D.

Case I. *Warty Vegetation of Semilunar Valve of Pulmonary Artery, occurring in a child six months old; Hypertrophy of right Ventricle; dilatation of right Auricle; Cyanosis.*—Emeline Whelan, ætat six months, had, from birth, been more or less affected with difficulty of respiration, and latterly much subject to cough. During the paroxysm of cough, the face became suffused, and the nails and ends of the fingers cyanosed. I did not see her until after her death, when I was requested to make the autopsy, by Dr. Elkinton, who was called to visit her in her last moments.

Autopsy, November 17, 1834.—*Exterior.* Body well formed; embonpoint considerable; no œdema of either upper or lower extremities; fingers curved inward, and of a purplish colour.

Head not examined.

Thorax. Lungs perfectly healthy, not engorged in the slightest degree, of a light pink or rosy hue, and perfectly crepitant throughout; mucous membrane of trachea and bronchial tubes slightly injected; pleura perfectly healthy, cavity containing no serosity; *heart*

* Leçons Orales, Tom. IV.

† Mem. et Observ. sur la Réunion.

‡ Sanson. de la Réunion des Plaies.

§ Ibid.

quite hard to the touch, its upper surface very convex, much more so than usual, and covered with veins in a state of enlargement; length of the heart, measured from apex to root of aorta, about two inches; tranverse measurement, rather more than two and a half; right ventricle enormously hypertrophied, there being scarcely any cavity left (concentric hypertrophy); walls about five lines in thickness; septum six and a half or seven; those of left ventricle about two lines; cavity of natural size; diameter of aorta double that of pulmonary artery, the orifice of which was almost entirely obliterated by a warty excrescence, arising from the middle semilunar valve upon its under surface, and extending to the others, to which it adhered. The external surface of this vegetation was lobulated, having a warty appearance, resembling very much a small raspberry, though less regular in its conformation; presenting, when cut into, an almost cartilaginous hardness, and adhering very strongly to the surface of the valve. The obstruction of the passage of the blood from the right ventricle through the artery was so great, that a silver probe passed with some difficulty; right auricle greatly dilated, its capacity being more than double that of the left; greatest thickness of its parietes, one line; that of the left, half a line; tricuspid and mitral valves healthy; semilunar valves of aorta healthy; coats of pulmonary artery appeared to be thinner than natural, having about the same thickness as the walls of the left auricle at their thinnest part; foramen ovale patulous, opening about three lines in diameter; pericardium perfectly healthy.

Abdomen. Liver greatly enlarged, occupying one-third of the abdominal cavity; on cutting into it, exudation of black blood in considerable quantity.

Other organs not examined.

Remarks.—The above case is interesting from its extreme rarity. I am not aware of the existence of another resembling it. M. Louis, in his Memoir "*Sur la Communication des Cavites Droites et Gauches du Cœur,*" has collected nine cases in which there was contraction of the orifice of the pulmonary artery, and given the details of one which came under his own observation in the wards of La Charité. Another is reported in the work of MM. Bertin and Bouilland; and a few isolated cases may be found in the medical journals; but in all these cases, with one or two exceptions, of a somewhat doubtful character, the contraction was the result of malformation, rather than of valvular disease. The general signs, as well as the post-mortem appearances, were very similar in all of them. In most, if not all, the right auricle was found hypertrophied and dilated, and

the walls of the right ventricle enormously thickened, so as to leave scarcely any cavity; the contraction of the pulmonary orifice arising either from a diminution of its calibre or the existence of a fibrous zone or diaphragm with an opening in its centre. The physical signs were not noticed, or very imperfectly, except in the case of M. Louis. In this case a strong *bruit de soufflet* was heard in the anterior part of the chest, becoming louder as the ear approached the sternum. It is to be regretted that no opportunity was afforded of examining these signs in the case I have detailed.

Case II. *Disease of the Heart, illustrating the cause of the second sound.*—This was a patient of my friend Dr. Ashmead, who requested me to see her with him. The following is the note of the case taken at the time of my visit. It was the only one I paid her during life.

May 6, 1835. Mrs. S——, ætat 45; complexion very pale. Three years ago, on lifting a tub, experienced violent pain along the sternum; since then affected with palpitations, arising from slight causes; the entrance of a person into the room gives rise to them, and they are frequently attended with violent pain under the sternum; countenance haggard; eyes wild. When suffering from these attacks, the whole system is more or less affected; the breathing becomes laborious, and she is obliged to lie down in bed. No blueness of lips; apex of the heart lower down than natural, and more to the left (between the sixth and seventh ribs); impulse considerable; cardiac region flat on percussion; first sound duller than natural; second sound replaced by a *bruit de soufflet*, heard loudest under the sternum, at its upper part; heard also at its base and above the clavicles.

I did not see her again until the 15th of December following, when I was invited to assist at the autopsy.* On the evening previous, she

* For a more minute account of the previous history and symptoms of this case, I am indebted to the kindness of Dr. Ashmead, who furnished me with the following note:

"Mrs. S—— was first seized, in 1830, with an acute and violent pain about the region of the heart, whilst suddenly lifting a tub of water. She had again a sudden attack of the same kind one year after. My attention was first called to her, in reference to the disease of the heart, in March, 1835.

Symptoms. Sense of acute pain behind the sternum, lasting two, three, and sometimes ten or fifteen minutes, produced by the least surprise, joy, agitation of mind, or the slightest exertion, especially a quick motion of the hand, or lifting the arms high; followed by palpitation, lasting four or five minutes, when the pain behind the sternum was subsiding. This pain commences behind the inferior third of the sternum, runs up as high as the upper third, and then outwards and up along the pectoral muscles, the inner side of the forearm, and hands of both extremities to the finger ends, with a tingling pain. It is most severe behind the

had put her grandchildren to bed, as usual, when she was suddenly seized with a sense of suffocation, attended with great anxiety and distress, and died in half an hour, at 10 P. M.

Autopsy, December 15th, 1835.—Present, Drs. Ashmead and Hallowell.

Exterior. Embonpoint considerable; no œdema of the feet or ankles; abdomen distended.

Head not examined.

Thorax.—About two pints of serosity in cavity of right pleura, a small quantity in left; lungs on both sides engorged, and, with the exception of a small portion of the upper lobes, infiltrated with serum; the quantity of serum so considerable as to distend them to double their size when in a state of collapse; no tubercles; heart nearly double its ordinary size, hypertrophied and dilated; whole of anterior portion of right ventricle, and upper part of left, covered with fat, a line and a half or more in thickness; great quantity at origin of large vessels, where it is about four lines in thickness; length of heart from apex to root of aorta about four inches and a quarter; greatest circumference, measured one inch from root of aorta, nine inches and a half; posterior face much arched; thickness of left ventricle, measured half an inch from origin of aorta, nine lines; a little below the middle of ventricle, two inches and a half from root of

sternum, very severe behind the inside of the elbow, and less so in the hands; difficulty of breathing during the attack very great; pulse tense, during the absence of the paroxysm regular, ranging from 80 to 90, slightly intermittent when agitated, but only for a few minutes; appetite natural; very slight cough; lies with equal ease on either side; decubitus on the back produces shortness of respiration and sense of constriction or drawing behind the sternum; face pale; slight œdema of feet; impulse of heart greater than natural; cardiac region flat over a much larger space than usual; apex of heart felt below the sixth rib, on a vertical line descending from anterior fold of axilla; feels a sense of beating in the back between the shoulders; much beating also at the epigastrium.

Sounds of heart. First sound appears duller than natural, and is synchronous with the impulse of the heart; second sound consists of the *bruit de soufflet*, or a kind of whizzing noise, accompanied in its first half with a very distinct *sifflement*, or a sound approaching to whistling. This was heard only behind the sternum. The *sifflement* was heard over the region of the heart, a short distance on each side of the sternum, and under the clavicles. The treatment consisted in general and local depletion and blisters, diuretics, purgatives, and antispasmodics, with a regulated diet.

June 1*st.* Condition about the same; at times appears a little better; pulse 92.

December 1*st.* Attacks more frequent, arising from slighter causes, and of longer duration. She is always worse during the flow of the catamenia, which have not yet ceased.

14*th.* Had three attacks to-day, and died in the night very suddenly."

aorta, six lines, exclusive of columnæ carneæ; thickness at apex three lines; thickness of septum seven lines; diameter of left ventricular cavity, at its middle, one inch and three-quarters; greatest thickness of walls of right ventricle three lines; cavity not sensibly dilated; tricuspid valve healthy, except the lower margin of the portion attached to the anterior wall of the ventricle, in which there is a slight ossific deposite; transverse diameter of right auriculo-ventricular opening about fourteen lines, of left idem; slight cartilaginous deposites at base of mitral valve, and one or two at its fringed extremity, not sufficient, however, to interfere in any degree with its functions; parietes of right auricle thin, appearing in one point to consist only of pericardium; cavity not sensibly dilated. Walls of left auricle hypertrophied; thickness a line and a half; cavity of natural dimensions, except the appendix, which is double the usual size. Semilunar valve and coats of pulmonary artery healthy; thickness about a fourth of a line; aorta dilated as far as its arch; inner surface rough, with numerous deposites of atheromatous matter beneath its inner coat; transverse measurement of aorta slit up at its origin (approximately) three inches and a quarter, of pulmonary artery one inch and three-quarters. Semilunar valves of aorta puckered, cartilaginous, and shrunk to about one-half their natural dimensions; they may be pushed upwards and downwards to a certain extent, by the finger, but are totally inadequate to perform the office of valves, leaving a large space between them, through which regurgitation must of necessity have occurred; pericardium contained about two ounces of serosity.

Other organs not noted.

Remarks.—The immediate cause of death in the above case is to be ascribed to the sudden and extensive serous engorgement of the lungs; but the observation is chiefly interesting, as affording an illustration of the cause of the second sound. The sounds of the heart have of late years attracted very considerably the attention of pathologists, and various opinions have been expressed as to the manner in which these sounds are produced. Laennec supposed the *second* sound to be caused by the contraction of the auricles, but the fallacy of this idea was successfully shown by the late Dr. Turner, of Edinburgh.* Since that period numerous hypotheses have been advanced, but the opinion now generally received is that based upon the experiments of Dr. Williams,† who attributes the second sound to the reflux

* Edinburgh Medical and Surgical Journal, Vol. III.
† Williams on Diseases of the Lungs and Pleura. Fourth edition.

action of the blood upon the semilunar valves of the pulmonary artery and aorta. These experiments have been since repeated and the results confirmed by a committee appointed for the purpose, a report of which was made at the meeting of the British Association in Dublin.* Several cases also confirmatory of these views, and analogous to the one above detailed, are published in a very highly interesting and well written thesis, by M. P. A. Guyot de la Guerche,† an essay in every respect worthy the attention of pathologists.

The causes which give rise to an imperfect closure or patulous state of the aortic valves, are stated by M. Guyot to be four in number, namely: fibro-cartilaginous, cartilaginous or bony transformation of the whole of the valves. 2nd. Partial destruction of the free edge of the valves or of their faces, which become reticulated. 3d. Rupture of one or more valves. 4th. Dilatation of the aorta, extending as far as its origin, and thus rendering the valves incapable of performing their functions. The symptoms observed in the four cases which came under the observation of M. Guyot correspond very closely with those observed in the case I have reported, as do also the post-mortem appearances in the only instance in which he had an opportunity of examining them. The former are stated to have been as follows, and when united, may be considered characteristic of the lesion in question, namely: 1st. Absence of the second sound, which is replaced by a *bruit de soufflet*, very sensible in the heart itself, in the descending aorta, the carotids and subclavian arteries. 2nd. Visible pulsations of the arteries of the neck, the head, and the upper extremities. 3d. Pulse strong, frequent, and vibrating. The following are the physical signs in the case which terminated fatally: dulness over the præcordial region, principally at its inferior part; pulsation of the heart visible to the eye; impulse strong; first sound dull and of short duration; absence of the second sound, which is replaced by a *bruit de soufflet*, very strong around the base of the heart, and extending along the sternum. On listening attentively toward the lower part of the sternum, a double *bruit de soufflet* was heard, one appearing to be isochronous with the pulse, the other succeeding it; pulsation of carotids and subclavians very sensible to the eye, isochronous with the pulsations of the heart; presenting also a *bruissement* very remarkable when the finger was lightly applied to them; a *bruit*

* American Journal of the Medical Sciences, May, 1836.

† De l'insuffisance des Valvules Aortiques, par P. Aristide Guyot de la Guerche Paris, 1834. See also Corrigan upon the same subject, Edinburgh Medical and Surgical Journal, 1832.

de soufflet was also readily distinguished. At the autopsy, the heart was found much enlarged, the pericardium containing a small quantity of serosity. *The valves of the aorta were thickened and transformed into a tissue, tough and elastic, very analogous to cartilage, leaving between them a triangular opening, having an area of thirty-two square lines, through which the blood must have regurgitated during life.*

Patescence of the aortic valves, although not of frequent occurrence, is now and then met with. I have seen several cases of it; but the above is the only autopsy which I have had an opportunity of observing. Like the one preceding, it is imperfect, inasmuch as little or nothing is said respecting the condition of other organs than those primarily affected, which should always be described with care; but this, in the present instance, could not be done with sufficient accuracy, as indeed not unfrequently happens in private practice. The diagnosis is a matter of considerable importance, as, without it, the practitioner may do much harm by the injudicious use of digitalis and other sedative remedies.

Case III. *Patescence of the Foramen Ovale.* August 30, 1837.—Was requested by Dr. Jewell to make the autopsy of a child two days old. The infant was born on Sunday morning; no accoucheur was present at the time, and the child remained attached to the cord about fifteen minutes. On the arrival of Dr. Jewell, the woman was flooding, there being an hour-glass contraction of the uterus, with retention of the placenta; the hand was introduced, and the placenta removed, when the hemorrhage ceased. The appearance of the child, immediately after delivery, was not particularly noticed, but subsequently it assumed a livid tint; its respiration was much embarrassed, and it at length died on Tuesday night, two days after birth, having previously vomited a considerable quantity of blood.

Autopsy.—Wednesday, August 30th, 1837.

Exterior.—Body of midding size, and well formed; deep lividity of lower extremities, soles of the feet having a dark purple or inky colour; face livid, but much less so than lower extremities; back and abdomen mottled; upper extremities natural in appearance, except the tips of the fingers, which are bent and have nearly the same dark colour as the toes. This healthy appearance of the upper extremities has been assumed only since death, they having been previously of the same dark hue as the lower.

Head not examined.

Thorax.—Lungs engorged throughout, right rather more than left,

resembling the first stage of pneumonia; colour dusky-red; tissue somewhat condensed and imperfectly crepitant; pleura healthy; pericardium healthy, containing no serosity; two large ecchymoses, one on the left and the other on the right side of the heart, at its base, beneath the pericardium; slight ecchymosis posteriorly beneath lower margin of auricles; slight engorgement of coronary vessels; length of heart from apex to origin of pulmonary artery fourteen lines; breadth, midway between the two points, twelve and a half lines; width of pulmonary artery three lines and a half; aorta three and one-fourth; cavity of ventricle of natural size; greatest thickness of walls of same, and also of septum, two lines; cavity of right ventricle of natural size; walls a line in thickness; mitral and tricuspid valves healthy; orifices of the pulmonary artery and aorta perfectly natural; septum ventriculorum perfect; auricles healthy, neither hypertrophied nor dilated; foramen ovale patulous, arising not from imperfect closure, but from original malformation of the valve; instead of two laminæ, an upper and lower placed in juxtaposition, there are two folds, so thin as to appear to be formed almost solely of the lining membrane of the auricle, attached to the inferior and anterior margin of the opening, and diverging from each other; the extremities of their posterior edge or border, or that inserted in the corresponding portion of the auricle, being about three lines apart. The opening formed of the upper or concave margin of these folds, and thick margin or edge common to the two auricles, is about two lines in diameter; mucous membrane of the *stomach* slightly red from imbibition, and containing a considerable quantity of spumous blood; *colon* distended by meconium of a greenish grass colour; mucous membrane, as well as that of small intestine, perfectly healthy; *liver* of ordinary size, right lobe congested, a small quantity of black blood exuding on being incised; spleen of a slaty colour, and not enlarged; *kidneys* healthy.

Philadelphia, April, 1838.

Art. VII. *Amputation at the Hip Joint.* By Daniel Brainard, M. D., of Chicago, Illinois.

In January, 1837, I was called to Michael Donnahue, ætat 25 years, a labourer, having a large tumour of the left femur.

He gave me the following history of his disease:—Nine months previously he had his left femur fractured, about six inches from its

lower extremity, by the falling in of a bank of earth under which he was labouring, at Schenectady, in the State of New York. Before this was properly consolidated, he travelled by a canal boat to Buffalo, from thence to Detroit by steamboat, and from thence to Chicago, a distance of about two hundred and fifty miles, on foot. Soon after his arrival here, he noticed a tumour on the outside of the thigh, growing from the place of fracture. It increased rapidly; soon involving the whole circumference of the limb, and nearly the whole length of the femur. At the time when I first saw him, the tumour extended downward to the knee joint, and upward to within three inches of the trochanter major on the outside, and within three fingers' breadth of the tuber ischii behind; measuring at its largest part, thirty-two inches in circumference. Its growth had been attended with but little pain; its surface was hard and irregular, and slightly tender on pressure. Two of the lymphatic glands of the groin were considerably enlarged. The general health of the patient had suffered much; he was pale and greatly emaciated; got no sleep at night, and had no appetite. Careful examination of the thorax and abdomen could, however, detect no signs of disease in either. As every means for arresting the growth of the tumour had been diligently employed without success, amputation seemed the only resort that offered a chance of recovery.

On the 14th January, the operation was performed, in the following manner. The femoral artery being compressed where it passes over the pubis by my friend Dr. Walker, a circular incision was made through the skin and tissues immediately subjacent, about four inches below the trochanter major; the integuments were dissected up, and a retractor applied. The muscles were then divided by a similar incision, and the bone sawed just at the lower part of the trochanter minor. The femoral artery and the profunda femoris were then immediately secured by ligatures. Considerable pieces of cartilage and of diseased cellular tissue were removed from the surface of the stump; and all the small arteries that bled were then secured.

On examining the stump, the bone was found to be diseased; its cavity was filled with a reddish, gelatinous and semi-fluid matter. The periosteum was thickened, and in some parts cartilaginous. I then proceeded, according to my original intention in such a contingency, to remove the bone at its articulation. Dividing the psoas and iliac muscles and the muscles that come from the pelvis to be attached about the roots of the two trochanters, with a scalpel, and the insertions of the glutei and the capsular ligament with a bistoury, I was enabled with the latter instrument to divide the round

ligament, and remove the head of the bone, without the least difficulty or delay. The articular cartilage over the head of the bone was thicker than natural, but the acetabulum appeared healthy. The hemorrhage was not great, except from the superficial vessels on the first incision; these for a moment bled profusely. Seven ligatures were required.

The patient was very timid, and suffered much from fear; during the operation he was so far exhausted as to require artificial warmth and diffusible stimuli, and remained thus depressed for a considerable time. On his reviving, the sides of the wound were brought together in a vertical line, and secured by adhesive straps, the ligatures being left out at the angles. A roller was passed around the pelvis in such a manner as to secure a compress over the glutei muscles, and afterward passed a few times about the stump, and the patient put to bed.

Evening. Has nausea and occasional vomiting; pulse 100, weak; no pain, but considerable restlessness; directed him to take sulph. morph. $\frac{1}{4}$ gr.

15*th.* The patient has passed a good night; tongue white and dry; stomach still irritable; drinks rejected during the day. A sinapism was applied to the epigastrium, and the morphia administered in the evening.

16*th.* He has rested well during the night; pulse 95; tongue and skin dry; nausea subsided. Sulph. magnes. ℥i. was directed; it moved the bowels once freely, and the morphia was then given.

17*th* and 18*th.* Pulse 93; skin natural; urine copious. The morphia was administered as usual at evening, the patient being unable to sleep without it.

19*th.* He has slept but little during the night; pulse 116; discharge from the stump profuse; dressings removed; the wound has adhered for two-thirds of its extent adjoining the superior angle; much serous matter and some fetid air escaped from the lower part on pressure. Morphia given as usual.

20*th.* Pulse 110; slight pain in the stump and in the bowels; skin dry. Tinct. rhei. ℥i. was administered.

21*st.* Bowels have been moved freely; pulse 95; no pain; removed a part of the dressings; the serous discharge is copious.

22*nd.* No material change; diet more nourishing; morphia omitted.

23*d.* Dressed the stump; the four ligatures left out at the lower angle came away; the discharge much diminished and of good pus.

From this period until February 3d, nothing worthy of particular note occurred; the patient's appetite and digestion were good, and all the functions were well performed. On the 3d, the three ligatures that were left out at the upper angle came away. The man continued

to do well, being free from pain and uneasiness of any kind, and able to move himself about without difficulty; the wound healing, and the suppuration daily becoming less.

February 15*th.* A hard tumour is discernible in the left iliac region; he is troubled at night with a dry cough; pulse 110; the wound continues to heal; the discharge from the 16th to the 25th February not amounting to more than f. ℥i. in twenty-four hours. In the mean time, the tumour just mentioned increased rapidly, presenting a hard, knotted and uneven surface.

17*th.* The stump is noticed to be slightly swelled; and on examination numerous hard bodies are discovered at various parts of its surface. The cough is severe, and not allayed by anodynes.

20*th.* An unusual pulsation is observed about the end of the femoral artery, which appears to be aneurismal in character. Cold applications and compression made to the part, and strict rest enjoined.

26*th.* The pulsating tumour, which had gradually increased in size, gave way after a severe fit of coughing. On arriving, I found him weak and exhausted from loss of blood. I proposed to tie the femoral artery, but the patient and his friends refused to permit me. The same means were therefore continued.

From February 26th to March 1st, he failed rapidly; his cough was more severe, his pulse more frequent. The tumour before mentioned extended to the symphysis pubis, and projected above the crest of the ilium; and the projections on the surface of the stump were greatly increased.

March 1*st.* At one o'clock A. M. the bleeding recurred, and, the patient consenting, I placed a ligature around the femoral artery, just below Poupart's ligament. The pulsation immediately ceased. He lost no blood by the operation, and did not appear to be much affected by it. He continued to sink, however, and died on the evening of March 2nd, forty-two hours after the tying of the artery, and forty-eight days after the amputation of the limb.

On sawing through the femur and diseased mass longitudinally, the former was seen to be involved in its entire circumference, and from the condyles to near the trochanter minor; its cavity, too, on either side of the fracture, was filled with cartilaginous and semi-ossified matter. The largest part of the tumour sprung directly from the place of fracture; it consisted of alternate layers of cartilaginous and calcareous matter, disposed in form of radii. Other portions, entirely cartilaginous, sprung from the periosteum above and below. Numerous distinct pieces, from the size of a pea to that of a hickory nut, were found in the ham and above the tumour, which were only loosely joined to the original mass by cellular tissue.

On opening the stump, a narrow passage was seen leading directly to the acetabulum, having its surface callous, like that of an old fistula. The acetabulum itself was sound; the cartilage had not sloughed, and its cavity was nearly filled with granulations springing from its edges. The ends of the divided muscles were tipped with cartilage, and similar pieces were imbedded between the muscles. Just at the end of the femoral artery was a sack large enough to contain f. ℥iv., which had given way at its lower part. Above this the ligature was found about the artery; the inner coats of the vessel were divided by it.

On laying open the abdomen, a large cartilaginous and bony mass was seen filling up the hollow of the left ilium, extending downward into the cavity of the pelvis, and upward to near the kidney. The external iliac artery passed through it.

Both pleuræ were found studded with pieces of bone and cartilage, from the size of a pea to that of an almond; they were mostly of a circular or oval figure, and flattened, so as to resemble a button in form; at the centre of each was a small calcareous granule, by which it was attached to the pleura. These were arranged in rows corresponding to the ribs, but not attached to them. Similar pieces in great numbers were found imbedded in all the lobes of either lung; most numerous, however, in the left.

No other marks of disease were observed in any part of the body.

The enlargement of the inguinal glands, mentioned in the description of the tumour, arose from the irritation of a blister, and subsided soon after the operation.

The reasons that induced me to adopt the method by circular incision in preference to that by flaps, were these:—It was first intended to divide the bone through, or below, the trochanters; and it was necessary to remove the diseased muscles as high as the bone itself, while enough of the integuments must be left to cover the stump; this could most easily be effected by the circular incisions. Such, however, was the ease with which the head of the bone was removed from the acetabulum, the neatness with which the sides of the wound came together, and the readiness of a great part of it to heal by the first intention, that it is not easy to conceive what advantage the more ordinary method can possess, even when the peculiar circumstances of this case do not exist, and when the design from the first is to remove the bone at its articulation.

To Drs. Goodhue and Walker, of this city, I am particularly indebted for their skilful assistance during the operation, as well as for their judicious advice both before and subsequently.

Chicago, March 10, 1838.

Art. VIII. *Observations relative to Lymphatic Hearts.* By J. J. Allison, M. D.

In 1832 Professor Müller of Berlin, discovered that the frog and some other reptiles of the orders Sauria and Batrachia,* are provided with organs, situated immediately under the skin, which exhibit distinct pulsations like the heart; and he ascribes to them the function of propelling the lymph towards the veins. The existence of these organs in the remaining orders, Chelonia and Ophidia, and in the *larvæ* of the Batrachia, was discovered by the author of the present paper in the summer of 1836; and a detailed account of them was presented that year in his Inaugural Essay.†

Müller denominates these organs *lymphatic hearts*, an objectionable term; inasmuch as the existence of a lymphatic system in reptiles, though generally admitted, is not absolutely proved. Thus Treviranus, among others, asserts that "all animals below the mammalia have no entire lymphatic system." Magendie‡ appears to

* Müller found the *lymphatic hearts* in the frog, toad, green lizard, and salamander. (Philos. Transact., 1833, p. 49. Poggend. Annal., 1832, Hft. viii. See also his Physiology translated by Baly, 1837, p. 275.) Professor Panizza of Pavia, has also published an Essay on the subject, entitled "*Sopra il Sistema linfatico dei rettili. Pav.* 1833, *fol.*" Not having seen this latter author's work, I am ignorant of the extent of his investigations; but he seems to have limited his inquiries to the animals in which lymphatic hearts had been discovered by Müller, as we would infer from the following passage in the Encyclopedia of Anatomy and Physiology, published in 1836. Under the head Amphibia, Mr. Bell says, "These lymphatic ventricles in the *amphibia* have still more recently received *further* examination and illustration from Prof. Panizza of Pavia, who published the result of his researches in 1833." The term Amphibia is here used as synonymous with the old order Batrachia, including frogs, salamanders, &c. Panizza has, however, found these organs in the *Coluber flavescens*; and Professor E. H. Weber has given an accurate description of the lymphatic hearts in a large species of serpent, the *Python bivitatus.* (See *Müller's Physiol. translated*, 1837, p. 275.) I saw a notice of the discovery two years after my own investigations were made.

† In several of the mammalia, namely, the dog, cat, mouse, and rat, I have discovered pulsations in the ischiadic region, probably analogous to the lymphatic organs in reptiles. The pulsation was not that of an *artery*; for in young kittens its frequency was *twice* that of the pulmonary heart. Farther examination however is necessary before I can decide with certainty upon the identity of the pulsations in question, with those in reptiles.

‡ *Mém. sur les vaisseaux lymphatiques des oiseaux*, Journ. de Physiol. Vol. I. p. 47. Magendie found *lacteals* ramifying upon the mesentery of a sea tortoise, the only reptile, I think, in which he could detect them.

What has been said in relation to the *lymphatics* does not apply to the *lacteals*, since not only have they been seen by Magendie, but by Hewson, Monroe, (the

entertain a similar view, and maintains with Spallanzani* that the appearance of lymphatics in reptiles is a deception resulting from the employment of refracted light, since the vessels in question belong to the sanguiferous system. The "Naturalist of Padua," did not, however, deny the existence of a lymphatic system in reptiles; on the contrary, he believed, that independently of the blood-vessels, the animal economy is provided with small canals which contain only a serous or mucous fluid, *"pourvue de canaux plus petits qui contiennent qu' un liquid sereux ou mucoux."*

I am aware that Professor E. H. Weber of Leipsig, and Panizza, profess to have seen lymphatics in the larvæ of frogs. According to the former, they look at first view like a transparent border on each side of the veins; but the globules of blood are never seen to enter these borders, but from time to time, a round lymphatic globule passes along them, and which seems to move from $\frac{1}{10}$th to $\frac{1}{12}$th of the velocity of the blood—they vary from 0.003 to 0.00519 of a Parisian line. The transparent border referred to has been noticed before, and by Blainville attributed to the inner coat of the vessels being lined by a coat of serum. The same fact was observed by my preceptor, Dr. Darrach, in 1823.

Weber's views in relation to the transparent border referred to, are probably erroneous, since the existence of lymphatics in transparent tissues is often very difficult to prove; indeed Lippi is accused by Fohmann, Panizza, Rossi, Blandin, Cruveilhier, and others of having confounded lymphatics with veins in man; and it may be remarked that Breschet in speaking of the extreme minute ramifications of the central artery of the retina, says that there must exist veins which are colourless, and of such extreme tenuity that we shall in vain attempt to distinguish them from lymphatics. How much more difficult then to distinguish lymphatics in such an animal as the tadpole!

Since writing the above, I find my doubts in relation to the trans-

second,) Cruickshank, and Fohmann. Mr. Bell describes them as terminating in two thoracic ducts, &c.; and speaks also of the *lymphatic system* being developed to an extraordinary degree in the frog, as well as in some of the genera of this class; being found in numbers, and of considerable size, immediately under the skin."—(*Cyclopedia Anat. and Physiol., Art. Amphibia*, 1836.)

Query? How are we to distinguish lymphatics in reptiles—they have no *glands*—and many veins are *colourless* when running through transparent tissues even in *man?* The *form of lymph globules* had not been discriminated, so as to serve for a test, when the supposed discoveries had been made.

* *Exp. Sur. La. Circulation. Diss. Seconde*, p. 280; and *Diss.* 1. Exp. XXVIII. LXVIII., LXIX., LXX.

parent border, strengthened by the observations of the translator of Müller's Physiology, who, in a note to that work, (p. 286,) states that M. Poiseuille—(*Ann. des Scienc. Nat.* Fevr., 1836, t. v. iii.) while watching the circulation in the capillaries, perceived that occasionally a globule of blood is thrown into the transparent space at the side of the current, and immediately loses its rapid motion; that it becomes quite stationary for a time if wholly without the current, while if only partly immersed in the transparent space, it is rolled along as it were by the blood moving rapidly over it. M. Poiseuille inferred from these observations, that there is in contact with the parietes of the vessels a layer of liquor sanguinis which does not move; and he states that M. Girard has demonstrated, that in case of inert tubes of small diameter, the portion of a fluid moving through them, which is in contact with their parietes, is stationary. The appearances above described have been observed by Prof. Weber, *and attributed by him, but less correctly, to the motion of lymph globules in lymphatics* surrounding the blood-vessels. The bodies which move thus slowly and irregularly along the sides of the current of blood are, for the most part at least, globular as he states, but they are *certainly within the blood-vessels;* they are evidently moved, as Poiseuille describes, by the same force that moves the current of blood, and are occasionally seen to re-enter this current.

Müller bases his doctrine of the *function* of the pulsating ventricles, on the fact, that we can inject the entire venous system from the organs in question. But we are not to infer from this circumstance that there is a connexion between the venous system and lymphatic organs, and such as he would imply, inasmuch as it is a well attested fact, that when a fine injection is thrown into the arteries of the belly it readily escapes from the internal substance of the intestines; when thrown into the vena portæ it returns not only by the veins and hepatic artery, but also through the excretory ducts; when thrown into the emulgent artery it soon passes into the emulgent vein —into the pelves of the kidneys and the ureter. Notwithstanding the above, we do not conclude, says Velpeau, that the blood during life is continually transuding into the alimentary canal, nor that it passes from the vessels of the liver into the hepatic ducts, or from the kidneys into the tubuli uriniferi and ureters. *The injections employed are of too penetrating a nature not to go wherever it may be desired to send them.*

Again, Magendie observed that when air was forced into the venous system of animals, the fluid passed from the pulmonary artery into the cellular tissue of the lungs, producing emphysema of these organs;

and finally into the arteries of the body. In cases of artificial respiration, air is thus sometimes forced into the vascular system. In proof of this assertion, a case is related by Professor Jackson, in his lectures, of a man who died of hydrophobia, in whose arteries were found quantities of air; which fact is accounted for by Dr. J. from the powerful action of the respiratory muscles, at the time when the rima glottidis was spasmodically closed.

It has been maintained by Shultz and Broussais, (supported by observation,) that the capillary tissue is a cellular structure to which the arteries and veins perform the office of vasa afferentia, and vasa efferentia—and a somewhat similar view in relation to the vascular net-work character of this tissue, is entertained by Breschet, Cruveilhier and Mascagni, who maintain, however, that the vessels are *lymphatics* which form the tissue. This view seems to be supported by the microscopical observations of Professor Arnold of Zurich, and the injections of Fohmann in relation to the cellular tissue at the back of the eye. If either of these opinions be correct, we may readily account for the injection passing from the lymphatic hearts into the vascular system.

Our knowledge then being still vague in relation to the lymphatic ventricles, it would be better to call them the *anterior* or *scapular*, and *posterior* or *ischiadic pulsating organs.* The following descriptions of these organs are drawn up from observations made in numerous dissections.

Subcutaneous Sacs. (*Poches sous-cutanées* of Duges.) In the frog and other reptiles, the skin is not, as in most animals, a tight envelope. The lines of adhesion along the back, (one for either side,) commence at the ischiadic region, and pass forwards, diverging so as to form a boundary between the dorsum and flanks. At the head the adhesions are close and strong. The flanks have corresponding adhesions. The two orders of attachments give rise to a free space on either side of several lines in breadth; constituting a subcutaneous sac, termed by Duges the *lateral.* There are attachments of another character between the muscles and integuments; viz: capillaries, which are especially numerous about the hinge-like process constituting the pelvis. These vessels, in general, pass obliquely outwards and backwards from the depressed raphé of the back to the integuments, so as to allow considerable looseness to the skin. Many of these capillaries being colourless, doubtless owing to refracted light, have probably been mistaken for lymphatics.

In the frog there are numerous subcutaneous sacs, which have been

delineated by M. Duges;* and according to him are in all twenty-two in number. Of these, four are symmetrical, namely,—the dorso-cranienne, sous-maxillaire, thoracique and abdomino-sus-palmaire. Those in pairs are,—the lateral, iliaque, brachiale, femoral, susfemoral, interfemoral, jambiere, sus-plantaire, and plantaire.

The subcutaneous sacs are of two kinds—a distinction omitted by our author. The one containing lymph, (*lymphraüme* of Müller,) the other an æriform fluid; the latter, it is probable, furnished the gas obtained by Edwards, when frogs were caused to respire in hydrogen. The volume of gas thus procured, is said to have equalled the animal's bulk in a very short time; and could the *entire* bulk have been exhaled from the blood? Cutaneous sacs exist in the tadpole, and in all those animals in which the lymphatic hearts are found, the same general arrangement prevails.

Subcutaneous Fluid.—Müller views the subcutaneous fluid as identical with lymph; but it has not been analysed. He alludes to its coagulability—and this only. Until better acquainted with its office, I shall name this the *subcutaneous fluid,* not to add to the ambiguity in relation to the term lymph. According to Brande's analysis, the subcutaneous fluid must be viewed as a distinct fluid, as it contains a notable portion of albumen, while lymph has so little as not to coagulate except by galvanism. The former has a decided alkaline reaction, which the latter has not. On the contrary, according to M. Raspail's analysis, the analogy is more close.

The subcutaneous fluid may be obtained in considerable quantity. At first it presents the appearance of an aqueous fluid, which soon becomes viscous, and finally coagulates. It separates into a coagulum and serum. The former is jelly-like, and nearly colourless. The taste of lymph is slightly saline, and restores colour to reddened litmus, a circumstance, however, which does not imply that a *free* alkali exists, for, according to Dr. Stephens, the supercarbonated alkalies as they exist in the blood, have the above effect, at the same time acting as salts in giving to blood its arterial hue.

A quantity of the subcutaneous fluid having been received into a watch glass, was examined with the microscope. In about five minutes crystals were noticed forming rapidly across the mass, no corresponding motion, however, being observable among the globules themselves;

* *Recherches sur L'Osteologie et Myologie du Batraciens, a leur differences ages, &c.* Avec 20 planchas. Par Ant. Duges, Prof. a la Faculté de Médecin de Montpellier, &c. 1835. Paris.

but as the crystallization shot forwards, the globules of the fluid became separately a new centre of crystallization, forming altogether a beautiful appearance. These crystals resemble those of the hydrochlorate of ammonia, depicted in Raspail's Organic Chemistry. (Plate VI., fig. 12.) They have been detected in the saliva before eating—in urine, and in the serum of the blood. These crystals bear no resemblance to those represented by Sir E. Home, (Comp. Anat., Vol. VI., p. 8,) which were found deposited in the coagulable lymph of an aneurismal tumour, since the latter approached the rhomboidal form, &c.

The subcutaneous fluid exhibits under the microscope innumerable particles, which Müller has not noticed, and of no uniform size; in this respect resembling those of the blood; for according to Milne Edwards, the blood globules of the *Rana temporia* vary from $\frac{1}{114}$th to $\frac{1}{140}$th of a line in diameter. They may be seen by a lens of very moderate power. These particles are not those of air—there is a peculiar *hyaline* aspect in the one, which the other has not; a circumstance by which the practised eye can never be deceived. Air bubbles moreover seldom assume the regular *elliptical* form; other points of resemblance may indeed be sufficiently striking to deceive the most experienced eye. We see here and there in the midst of the clot, patches of serum, the particles of which have a free motion among themselves; a fact which supports the opinion advanced by Berzelius and substantiated by Müller, that the coagulation of the blood results from the fibrin dissolved in the serum, and is wholly independent of its globules; a theory opposed to that entertained by Home, Prevost and Dumas, and others. Between the particles of the coagulum and those of the serum, no sensible difference could be discovered. The globules of the subcutaneous fluid have a tendency to collect into clusters; but I have not detected any arborescent arrangement, as has been affirmed to take place in the blood of reptiles and that of man. It is true we can cause a sort of mesh-work, when the lymph is placed between slips of glass, as recommended by Lister and Hodgkin; but a similar appearance forms in water under like circumstances; the appearance being wholly unlike that of the blood.*

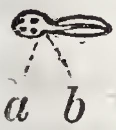
* Müller in his *Physiology*, which we have seen since the preceding observations were made, gives more definite information respecting the lymph. He observes that by drying the fibrinous coagulum of a known quantity of lymph, and then weighing it, eighty-one parts of frog's lymph contain one part of dry fibrine, a proportion which seems remarkably large. If frogs are kept for a long time, their lymph ceases to be coagulable; the same is more or less true of the blood.

He speaks also of the globules, which he says are one-fourth the size of those

The author has studied, with some attention, the structure of these globules, but as the accuracy of his observations require to be further tested, he defers publishing his researches till a future period, when he will offer a theory as to the nature of the fluid itself, illustrating the capability of the animal economy of resisting those external influences, which would otherwise prove its destruction.

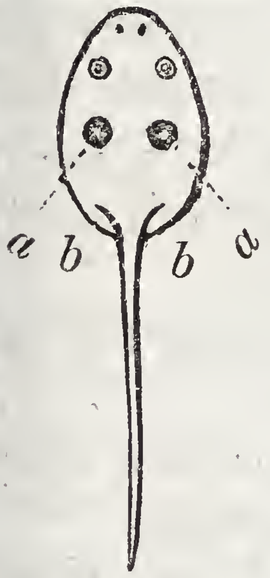
Pulsating Organs in the Larvæ of the Frog.—These become visible in the tadpole about the period when the external branchiæ appear; they lie immediately under the skin, on either side of the dorsal line of the body.

Fig. 1.



The following figure (1) represents these organs in a tadpole immediately after the absorption of the external branchial apparatus; the anterior *a*, and posterior *b*, seem continuous, which renders it difficult to appreciate their respective motions, but the distinction becomes obvious as the animal grows.

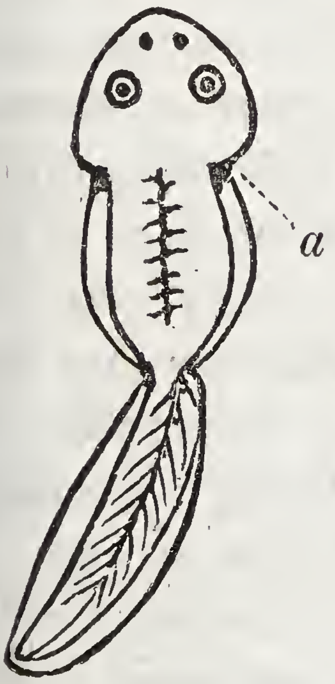
Fig. 2.



The distinction between the two sets of organs is well seen in a tadpole of the size represented by the accompanying figure (2), of which *a* are the anterior and *b* the posterior organs.

The following cut (*fig.* 3) represents the *anterior* organs in a larva advanced in its developement, the legs being about to appear. After skinning the animal, we see behind the transverse process of the third cervical vertebra, at the point *a*, a black diaphanous space, which pulsates regularly.

Fig. 3.



The *posterior* pulsating organs are situated along the caudal vein, and generally at those points where the four or five anterior branches are received. Their general appearance is that of gelatinous bubbles, probably cellular substance in the amorphous state of Meckel, and not assuming the type of that tissue till the animal is fully developed. This fact supports Tiedemann's assertion, that cellular tissue possesses a contractile power differing from elasticity.

The following figures exhibit the posterior organs in tadpoles during their different stages of develope-

of the blood, and are round and not flattened; thus differing from those of the blood.

Müller's observations likewise confirm our remark in relation to the globules of the lymph having no share in the coagulation. (*Müller's Physiology*, 1837.)

ment, showing that as the tail disappears the relative space occupied by the pulsations becomes proportionately lessened.

Fig. 4. represents a full grown larva of the *Rana pipiens,* the hinder legs of which have just protruded.

Fig. 4.

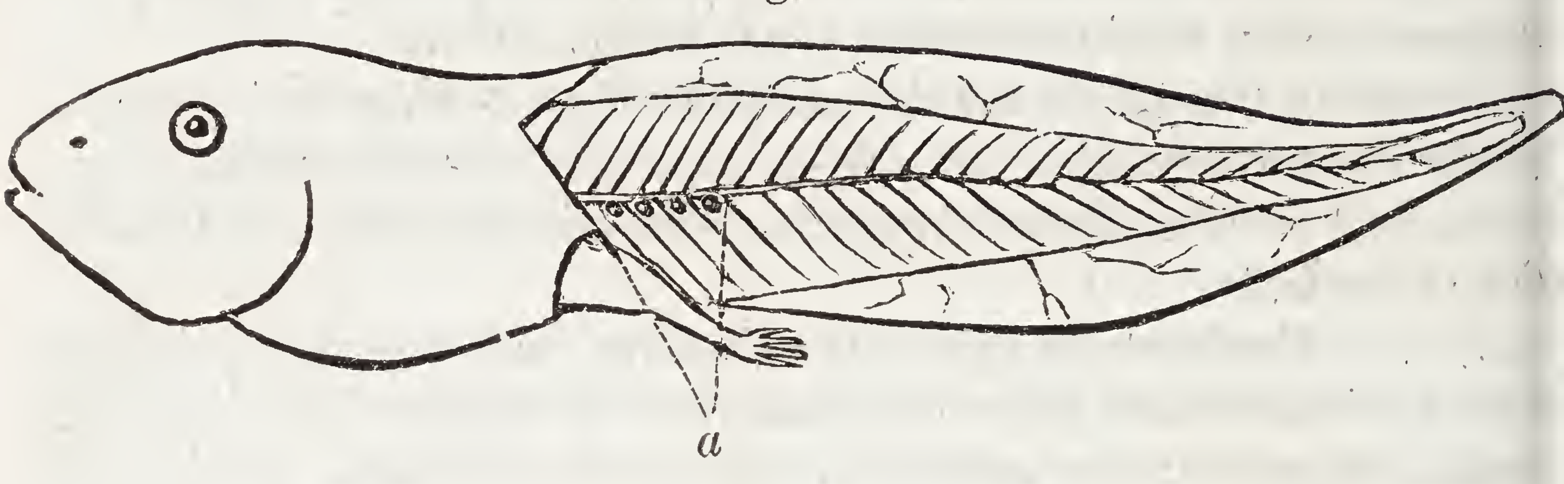
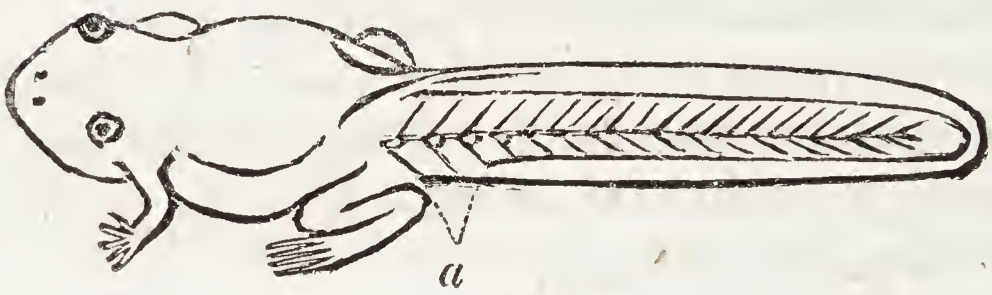


Fig. 5.



In the opposite specimen (*fig.* 5) all four legs are out, the lungs are considerably advanced towards their function, being partly tubulated, and partly cellulated.

Fig. 6.

Fig. 6, represents a tadpole, the tail of which is nearly gone.

In all the above figures, letter *a* refers to the posterior pulsating organs.

Fig. 7.

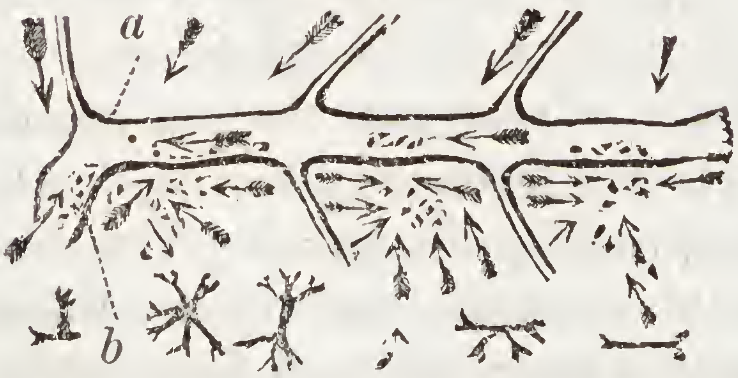


Fig. 7 is intended to represent the motion communicated by the pulsations to the *maculæ* scattered throughout their substance; showing, in fact, their *own* motion. *a*, Caudal vein; *b*, situation of the pulsations, being mostly *below* the vessel. The pulsations give rise to corresponding *locomotion* of the branches sent off from the caudal vein, and frequently to the main trunk itself, which is represented in the cut by *featherless* arrows.

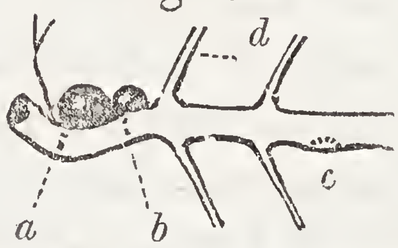
The pulsating organs present *black maculæ,* which, as they recede from the organs in question, become more and more scattered; and it is by their presence that we are enabled to study the motions of the pulsations, which, from their transparency, would have been difficult. During the *dilatation* of the hearts, these maculæ rush from a circumference towards the centre, and the light is simultaneously reflected

s by a bubble of air. These motions are exhibited by Fig. 7, which lso shows a magnified view of some of these maculæ.

When viewed in the direction of the animal's length, the lymphatic entricles become prominent during each dilatation, and when viewed n a certain light a depression will be noticed to follow the contraction. The pulsations are not always synchronous with those of the ame pair, nor with the opposite pair; this is seen in Fig. 8, for when contracted *b* dilated.

The pulsation of the caudal *vein* I noticed but once, although ought for with different lights and powers, and in one specimen for wo hours; the contraction is represented n the accompanying figure by the dotted emicircle at *c*.* Hence, it must be evident hat the *pulsations of the lymphatic organs re not dependent upon those of the caudal essel*.†

Fig. 8.



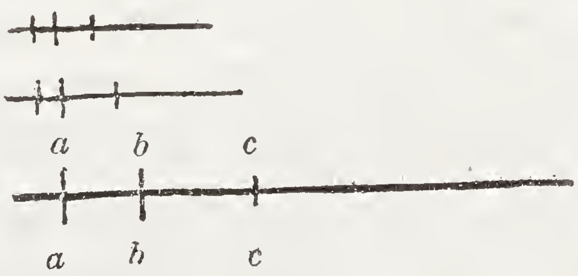
Anterior pulsations in the Frog.—Marshall Hall, in his Essay on he Blood, describes a vessel of the frog which pulsates independently f the heart, and brings forward this fact as proof of arterial contractility. Professor Müller proves the supposed artery to be a vein, and ts action to depend, not upon an irritability of its own, but on that f the adjacent cellular tissue. He views the pulsation as produced y a distinct organ, which he calls the "*anterior lymphatic heart.*"

The anterior pulsating organs are two in number, one for either ide, and are situated beneath the posterior angle of the scapula at he extremity of the transverse process of the third cervical vertebra.

* There was extravasated blood in the pulsations which diminished in bulk multaneously with the contraction. The curve of the vessel would become early straight during the continuance of the pulsation, and locomotion communicated at the same time to the branch *d*.

† The following figures are ntended to represent the relative position which the lymhatic organs assume in different stages of the tadpole's rowth. The horizontal line xhibits the entire length of e tadpole, while *a* represent the situation of the eyes, *b* of the anterior and *c* of the posterior pulsating rgans. The figures 1 and 2, though not lettered, will be readily understood by mparing them with figure 3.

Fig. 1
Fig. 2
Fig. 3



I should have stated elsewhere that the lymphatic organs in the early stage of e tadpole must not be confounded with the "ciliary motion" spoken of by Sharpss and others.

Each "heart" consists of two portions, the posterior of which is the greater and of a triangular form.

To obtain a good view of the anterior pulsating organs, it is necessary to expose the abdominal cavity, and reflect back the triangular membrane, which lies over and obscures its motion; several layers of cellular tissue bound firmly over the heart may also be dissected off. The pulsations then become very distinct. Another view may be obtained by reflecting the skin from the back, and cutting away a portion of the scapula, which Müller considers the better view. In the toad the anterior hearts are remarkably distinct, and in order to obtain a dorsal view of them the scapula need not be removed.

Hall describes the vessel emerging from the scapular pulsations as a branch of each of the arteries, which, after separating a short distance from the pulmonary heart, rejoin, and form the aorta. A favourite theory has evidently misled our author. The vessel, in fact, which proceeds forwards from the organ parallel to the vertebral column, is a vein, which unites with another from the occiput; the small trunk produced by this union, namely, the jugular vein, now descends, receives branches from the scapula and axilla, and finally from the region of the throat, then ends in the vena cava superior, at the place where the great veins of the arm enter the latter.

In order to observe to advantage the supposed artery of Dr. Hall, we must dissect away the tissues exterior to the vessel; a good view may also be obtained from the back by cutting off a portion of the scapula. The blood in the trunk and auxiliary branches will be found to oscillate at each dilatation of the organ, and then resume the venous current; simultaneously with the dilatation, the vessel in question is drawn towards the organ itself with considerable force, becoming at the same time *contracted* and *pale*. Marshall Hall, then, is correct when he asserts this fact, but his inference is erroneous. He views the contractions as that of an artery resulting from an inherent contractile power; whereas it arises from tension of the vein, exerted by an exterior force. The same remarks apply with equal force to Müller's views. He conceives the vessel to dilate simultaneously with the contractions of the lymphatic organs. True, but the dilatation depends upon the tension being removed which had contracted the vessel, and not from distension of fluid *forced* into the vein from the lymphatic heart, as he would imply.

In order to destroy the function of the anterior organ it may become necessary to dissect away many layers of cellular tissue, when the locomotion of the vessel itself will also generally cease. The

neglect of this precaution may in part account for Dr. Hall's error in asserting that the vessel will be seen plainly to pulsate after the destruction of the above mentioned tissue. It is possible, however, that the vessel may have pulsated independently of the lymphatic and pulmonary organs, inasmuch as certain veins possess in themselves an inherent contractile power, as I shall endeavour to establish in a future paper.

By making an incision into the anterior pulsating organ, we can inject air or mercury into the subcutaneous sacs of the axilla, thence into the vena jugularis, vena cava superior, auricle, ventricle, and finally into the arterial system; the pulsating organs will still continue their function.

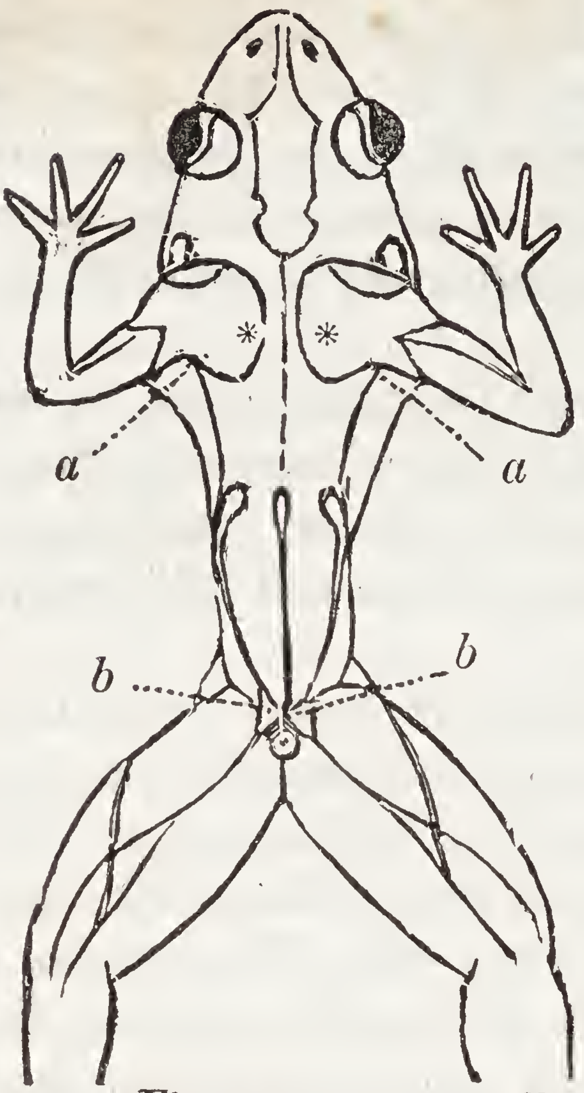
According to Müller, the anterior lymphatic hearts receive the lymph from the anterior portion of the body, and probably also from the intestinal canal, in order to send into the jugular vein.* This assertion I have not verified, not having been able to detect the actual flow of lymph into the venous system, from either the anterior or posterior pulsating organs. It is proper to remark, however, that having on one occasion pressed my finger upon the anterior heart, that I noticed globules of a fluid to enter the vessel in question, and distend it very much. The lymphatic sac immediately anterior to the organ, became likewise turgid. The distension of the vein, however, probably resulted from accumulation of fluid, from the pressure necessarily exerted upon the neighbouring vessels.

Posterior Pulsating Organs in the Frog.—These were discovered by Müller. They are situated in the ischiadic region, and lie immediately under the skin. When we remove the integuments, which is generally unnecessary in order to detect them, there are noticed two blackish triangular-like depressions in the region indicated, one on either side, which have distinct pulsations averaging about 80 per minute.† In the *Rana fontinalis* their length, parallel to the axis of

* Müller, estimating the capacity of each of the lymphatic hearts at one cubic line, calculates that the quantity of lymph which they would project into the veins in a minute, supposing that they empty themselves entirely at each contraction, would be $4 \times 60 = 240$ cubic lines, since they contract about sixty times per minute. But they expel only a part of their contents at each contraction.—*Elements of Physiology, translated by Baly.*—p. 286.

† *Muscular spasms, &c.* are apt to deceive, being often mistaken by the inexperienced observer for the pulsations themselves. When we seek for the pulsations in the tadpole through the microscope, the motion of the eyelids is a frequent source of deception, for the least motion being reflected from the glass, seems like a pulsation in the animal itself.

Fig. 9.



the body, is about two lines, and their breadth one line and a half. The ischiadic artery and vein, accompanied by the crural nerve, in their exit from the pelvis, pass beneath the outer margin of these organs.

The accompanying figure (9) represents the lymphatic hearts in the *Rana halecina; a*, position of the anterior pulsating organ (dorsal view); *b*, the posterior pulsating organ bounded anteriorly by the coccygeal muscle, which is seen in the figure just above the cloaca.

When the ischiadic organs contract, motion is communicated simultaneously to the coccygeal muscles and tissues adjacent, and we often see a perceptible locomotion of the vessels of the thigh as they pass through the organ.

Fig. 10.

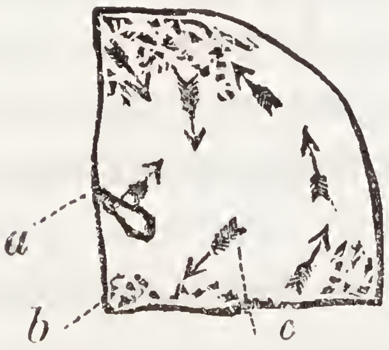


Fig. 10 presents an enlarged view of the posterior organ of the left side. The arrows indicate the irregular dilatation which is rendered evident in the animal itself, by the presence of black maculæ, scattered here and there through the tissue. The posterior outer angle *b*, elevated itself with each contraction, and the internal structure of the organ separated into globular portions not unlike the rudimental pulsations as they exist in the larvæ. In the specimen from which the drawing was taken, a bubble as of air was noticed at the point *c*, which had a motion corresponding to that indicated by the arrow. Simultaneously with the dilatation of the organ, a brownish-red fluid was also noticed, which disappeared with the contractions—a circumstance not uncommon.

We may obtain a posterior view of the organs from the abdominal cavity; and when the pelvic or hinge-like bone is elevated, it becomes evident that the corresponding hearts are separated from each other by the interposed rectum.

The maculæ of the pulsating organs consist of two distinct portions; the pigment, properly so called, and numerous gritty-like granules enveloped in a cellular capsule. These granules present under the microscope an opaline appearance, and seem to be made up of others, which give to their surface a studded botryoidal appearance.

The pulsations of the organs do not depend upon the superficial cellular tissue, for this may be removed, together with the black granules constituting the maculæ, so as to leave a line in depth, without the function of the organ being necessarily destroyed; (in one specimen, when the last layer of the tissue had been dissected off, colourless globules, suspended in a fluid, passed out in a vortex.) Neither does the pulsation depend upon the ischiadic vessels, since the latter, were it ever so great, would be inadequate, inasmuch as it is one, sui generis—the pulsations continuing when the vessels and pulmonary heart are destroyed. A fact better demonstrated in the tadpole.

Anteriorly to the lymphatic hearts there is on either side a subcutaneous sac termed by Duges *iliac*, containing a fluid often mixed up with a gas. Pressure on this sac renders the pulsating organs turgid, the fluids accumulating within, and this condition ceases on the removal of the pressure. The distension of the organ does not destroy its function.

The fluid in this sac frequently oscillates, owing to an impulse from the lymphatic heart, the oscillation being greater in its vicinity. In order to notice this oscillation, the bubbles of the fluid must be continuous, since if they be isolated by pressure, the motion cannot be communicated from the fluid in the organ to that in the sac, a circumstance which favours the idea of a direct communication between them, which I think I have seen in my dissections. The fluid in the sac could not have been put into motion from mere contiguity of tissue. When the sacs are distended, and the pressure removed, the fluid escapes through the medium of the organs into the adjoining sacs.

We often see bubbles of gas in the vessels, in the immediate vicinity of the lymphatic organs in the frog, tortoise and other reptiles. I have also detected a *free gas* circulating in the blood-vessels of several of the mammalia, both in arteries and veins.

The inflation of the posterior pulsating organs fills a lymphatic sac lying under the skin at the posterior extremity of the abdomen; another between the abdominal muscles and peritoneum, in the same situation on either side. Müller affirms that a large lymphatic vessel with thin coats becomes filled, leading in an upper direction to the arteria iliaca, and appears to come in contact with that of the opposite side, ascends towards the aorta abdominis like the ductus thoracis, but the vein cannot be further inflated in an upward direction, and thinks that it is possible that lymph of the posterior of the abdomen goes to the posterior lymphatic hearts, while the lymph of the

intestinal canal and anterior of the abdomen goes to the anterior lymphatic hearts.

If the lymphatic organ be further inflated in an upward direction of the animal, a superficial vessel becomes filled, which proceeds from the back into the organ. The inflation of the posterior heart fills the abdominal sacs generally. We can also inflate the spaces of the thighs, and sometimes those of the legs to the extremity of the toes; several ounces of mercury can thus be forced into a small frog, and by using the coarse injection a pretty preparation of the different subcutaneous spaces may be obtained. The lymph sacs of the ischiadic region, and those of the thigh communicate, inasmuch as we can inject the one set from the other.

The connection of the posterior lymphatic organs with the venous system merit attention. The veins of the hinder extremities are the vena cruralis and the vena ischiadica, these unite above the thigh by a large transverse anastomosis. The vena iliaca is the continuation of the vena ischiadica; these become the venæ renales advehentes Jacobsoni, which pass into the kidneys after receiving branches from the posterior region of the abdomen. The transverse anastomosis of the vena cruralis and vena ischiadica passes in the regio pubis into the vena abdominis anterior impar, so that both cross veins unite in a semicircle, from the middle convexity of which the vena abdominis anterior springs, while the extremities of the semicircle pass behind into the vena ischiadica. The vena abdominis anterior, receives the blood of the abdominal muscles, and, as happens in all amphibia, passes to the vena portæ of the liver.* Thus the blood of the posterior of the body, says Müller, does not immediately reach the vena cava inferior, but, according to Jacobson, first passes through the vena advehens of the liver and the venæ advehentes of the kidneys. The venæ advehentes of the kidneys, and the vena advehens anterior cum vena portæ become filled with air each time the lymphatic hearts of the regio ischiadica is inflated, while the air passes into the vena ischiadica which lies under the lymphatic heart through the venous branch, and then passes further, partly through the venous semicircle into the venæ renalis, and veins of this side, partly through the venous semicircle into the venæ renalis advehentes of the other side, and into the venæ abdominis anterior;† thus from either organ we can inject

* Venous system cited by Müller from Jacobson in Meckel Archiv. für Physiologie, 1817.—p. 147.

† In the amphibia, as in the mammifera and birds, there is found a vena portal system, only much more extensive, since, from the researches of Bojanus, (Ad-

the extreme branches of the toes, the mesentery, liver, kidneys, œsophagus, &c.

Pulsating Organs in the Sauria.—Their relative situation is the same as in the salamander and larvæ of the frog; but in the *Tropidolepis undulatus,* it is difficult to find the posterior organs, since they are concealed by muscles. Müller found the organs in the *green lizard,* and he says it is only necessary to skin the animal in order to detect them; hence the facility of distinguishing the pulsations must be greater in some of the Sauria than in others.

Fig. 11 represents the *Tropidolepis undulatus; a* indicates the situation of the posterior organ.

Fig. 11.

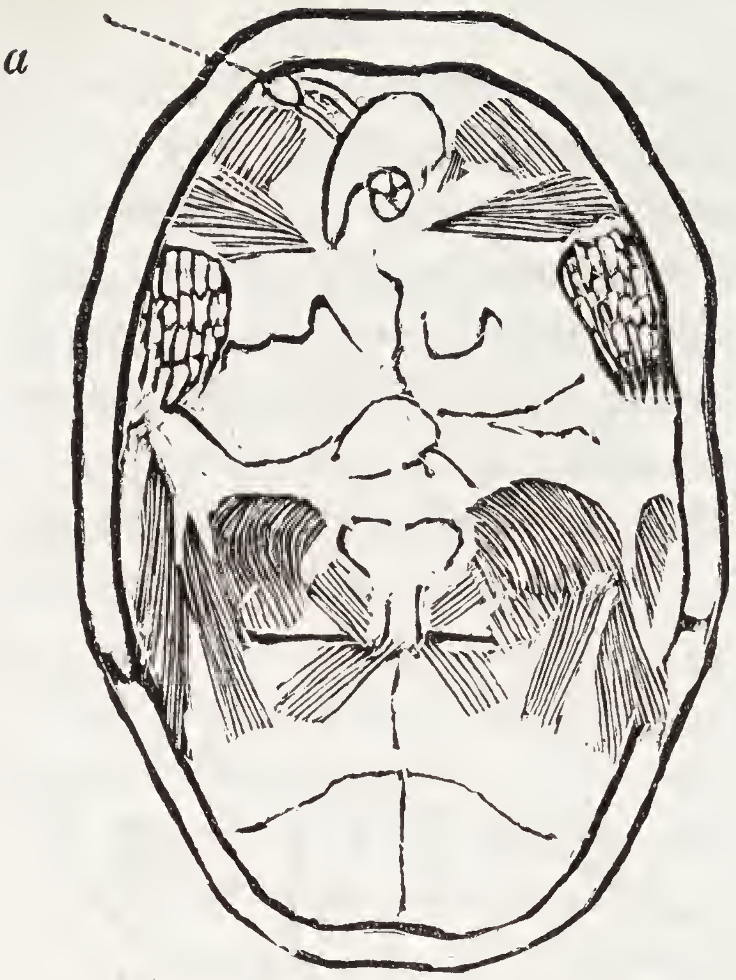
Pulsating Organs in the Ophidia.—I found it difficult to discover these organs in the snake, owing to the oscillations into which its numerous muscles are thrown when it is skinned. I eventually succeeded, however, by taking advantage of the fact, that water of a certain temperature destroys muscular irritability in the frog, while the functions of the pulmonary heart are not sensibly affected. A snake (*Coluber sirtalis*) was immersed in water at 120° F., convulsions soon followed, and the animal became permanently rigid; the animal being skinned, the pulsations were readily detected above the cloaca, and presented a cellular appearance of several lines in length. A very good view may also be obtained from the abdominal cavity as in the frog. The pulsations are partly concealed by muscles.

After having once seen the pulsations of the lymphatic organs in the snake, they may be readily distinguished from muscular oscillations.

In the snake the subcutaneous fluid is not so great in proportion as in the frog and toad.

versar Anat. Vol. V., p. 24), not only the veins of the stomach, the intestinal canal, the spleen and pancreas, but moreover, those of the posterior extremities and integuments of the belly contribute in forming the vena portæ.

Fig. 12.



Pulsating Organs in the Chelonia.—-I discovered the lymphatic organs in the *Cistuda clausa.* In order to obtain a view of the posterior pulsations in this animal, take off the hinder hinge of the plastron, and then skin the thigh till the cellular tissue is fully exposed; this is to be carefully separated from its connections with the carapace, or upper shell, when the pulsations will be found in the ischiadic region, being remarkably distinct and strong. The posterior organs are seen in the annexed cut, *fig.* 12, *a.*

The following table exhibits the frequency of the lymphatic organs in seventeen individuals, compared, in some instances, with the pulmonary heart and respiration, in which case they were counted immediately after each other, the time thus occupied being about five minutes for each specimen. The *lymphatic hearts* were counted *before* the knife was resorted to.

Lymphatic Hearts.	*Throat.*	*Pulmonary Heart.*	
100.80.64	120*		
58.			
120.		160.†	
160.		120.	*In Frogs.*
100.68.		100.68.	
60.56.	105		

* It is generally thought that cold-blooded animals breathe slowly. In proof of this, Dr. Stevens affirms, that a young alligator, though agitated from having been laid hold of, breathed from three to four times in a minute. (Stevens on the Blood, p. 35.) This by no means holds good in relation to the frog, since their respirations are more frequent than in man: respiration in the latter being, on an average, from 14 to 27 per minute.

† Whytt makes pulsations of the pulmonary heart, when exposed, about 65 per minute. Spallanzani and Dr. Edwards, I think, make the same average, and Fontana nearly the same.

160.80.	50.60.		
120.80.	60.		
160.120.			
80.			
120.80.68	130.120		
100.80.		48.40.60.	*In tadpoles.*
100.		120.	
200.		120.	
160.			
200.			
160.88.		140.100.92.96	

From the preceding table we may draw, among other inferences, the following:

First. That the pulsations of the lymphatic organs vary in different specimens from 60 or less to 200 per minute.

Secondly. That they vary in the same individual so as sometimes to double themselves in frequency.

Thirdly. That the lymphatic pulsations bear no fixed relation to those of the pulmonary heart, or to respiration, the lymphatic hearts being on an average of a greater frequency.

At a future period I shall offer a summary of experiments relative to the connection which subsists between the functions of the pulsating organs with the circulation and respiration.

Art. IX. *Malformation of the Internal Genital Organs in an Adult Female.* By J. B. S. Jackson, M. D., of Boston.

For the following history of the case I am indebted to Dr. Ezra Palmer, Physician to the House of Industry in this city. The patient, a German girl, ætat 25, entered the House of Industry, on the 13th of last February, under severe salivation; had been taking mercury for a "a bilious attack." March 15th she was discharged, but was readmitted on the 1st of April, with œdema of the face and limbs, headache, &c. Understanding from her that she had not menstruated for five months, Dr. P. considered it a common case of amenorrhœa, and treated her accordingly. Features coarse, but aspect more decidedly feminine than masculine; complexion dark; had always a very timid, abashed, stupid look, and was extremely slow in answering questions; this last seemed to be owing to something more than an ignorance of our language; voice a coarse feminine. Died suddenly on the 16th of April. Since her death Dr. Palmer has succeeded

after much difficulty, in finding a German woman, at whose house the subject of this case staid for some time during the spring. This woman appears to be fully entitled to credit, and gives the following important particulars, which she received from the patient herself. Sailed from Bremen in April, 1837, and arrived in this country on the 3d of September. Before embarking, her health was perfectly good, and she menstruated regularly; was shipwrecked on the passage, besides suffering much from sea-sickness, and after the fright occasioned by this disaster, the catamenia stopped. On her arrival she had œdema of the limbs, spitting of blood, headache, &c., which symptoms were very naturally attributed to the amenorrhœa. An Irishwoman, who laid in an adjoining bed at the House of Industry, being questioned since the death of the patient, stated to Dr. P. that she had heard her speak of having had a child in her own country; as will appear by the dissection, this must have been impossible; and it has been well ascertained, moreover, that she was never married, and that she was the daughter of a respectable farmer; the story, therefore, may have been fabricated by the person who told it, from that love for falsehood which many of the low Irish seem to have.

April 20th. Examination of the body at the dissecting room of the Medical College.

Rather a large frame, and fleshy; lower extremities have somewhat of a masculine appearance, and the hands decidedly so; breasts well developed, as appeared externally and on dissection.

External organs of generation perfectly well formed as in any adult female; but, on separating the labia, the vagina, or rather the vulva, is found to be about half an inch in extent, terminating then in a cul de sac, the inner surface having, however, the usual appearance.

The pelvic organs being removed, the rectum was carefully dissected from the bladder, and the vagina was then found to be completely wanting. In the place of it the cellular membrane, to the extent of seven or eight lines laterally, was a little thicker than it was on each side, but without any trace of a cavity.

In the place of the *uterus* are two distinct cornu of a regular, elongated, cylindrical form, going off transversely across the pelvis, and intimately connected with the fundus of the bladder. Something which may be the rudiment of a body of the organ, is sent off by these to be lost insensibly in the cellular membrane which represents the vagina; it is about one and a half inches in extent, slightly thickened, fleshy to the feel, but without any cavity.

Left cornu three inches long; three lines in diameter at first, but

increases to five lines at the free extremity, which is rather blunt. It consists of a coarse, loose, fibrous structure, of a reddish colour, and having somewhat of a muscular appearance; no trace of cavity. Fallopian tube three and three-quarter inches long, and of about the usual size; fimbriated extremity large and free. Ovary about one-third as large again as usual, of a flattened form, smooth on the surface, and very flaccid to the feel, as if it contained many vesicles; though it was not cut open, it hangs free in the cavity of the pelvis in a sort of broad ligament, but much less to the left side than usual; ligament connecting it with the cornu quite distinct.

Right cornu one and a half inches in length, or more than twice that of the other, for the most part about three lines in diameter, but increasing to six at its ovarian extremity. It differs from the other cornu in structure, being white, rather dense, and more resembling the common "uterine tissue." No trace of cavity; after it leaves the fundus of the bladder, it penetrates through the muscles, and appears at the external inguinal ring; there it gives off a fallopian tube three inches in length, of about the usual size, having a free and well developed fimbriated extremity. The ovary, which lays fairly in the groin between Poupart's ligament and the superficialis fascia, is one and one-third of an inch long, two-thirds of an inch wide, and one-third of an inch thick, of a very regular, oval form, a little flattened, rather firm, very white, and much more resembling a testicle than an ovary; it was nearly surrounded by serous membrane, forming a sort of tunica vaginalis, though between the opposing surfaces there were numerous adhesions; the fallopian tube was mostly, if not entirely, bound down by adhesions, besides being very much contorted, so that the limits between it and the cornu were not clearly made out till after some dissection.

The parts are now in the cabinet of the Society for Medical Improvement.

The kidnies were much and very peculiarly diseased, but did not exactly resemble any of the forms described by Dr. Bright. The bladder, which was large and collapsed, contained three or four ounces of urine, some of which being tested by heat coagulated strongly.

The other organs had been removed.

Boston, June, 1838.

Art. X. *Cases of Diffuse Cellular Inflammation.* By John M. B. Harden, M. D., of Liberty county, Georgia.

The following cases of painful interest to myself, I deem of sufficient importance to lay before the medical public:—

Case I. About the beginning of November, 1837, the Rev. Mr. Cozby* travelled from St. Mary's to Augusta, Georgia, for the purpose of attending a meeting of the Synod of South Carolina and Georgia, at the latter place. He performed the journey on horseback, an exercise to which he was unaccustomed, and which was rendered more fatiguing by his having kept up in company with a friend, who was travelling in a gig. It was remarked, by a fellow traveller, that there was an unusually violent motion of his arms, and particularly of his left arm, communicated by the gait of his horse. He spent about a week in Augusta, in *apparently good* health. After the adjournment of the Synod he left in company with two clergymen of this county, on their return home. On the first evening of their journey, after stopping for the night, he complained of being unwell and of a pain in the left axilla, which he supposed to proceed from an enlarged gland. He had fever which continued all night. On the next morning, however, feeling somewhat refreshed, he renewed his journey, but had not proceeded far before he was compelled to stop and lie on the ground. One of the gentlemen, who was in a gig, immediately took him in, and after about two days' travel, brought him to his own house in this county, where he arrived on the 18th day of November. During the journey he remained in a state of extreme drowsiness, with high fever and pain, which was mitigated by a sling and a handkerchief tied over the arm and around the body. On the night of his arrival he suffered most excruciating pain in his armpit and shoulder, and his fever was very high. On the 19th he was bled from the arm. On the 20th a physician was called in, who attended him until the 25th, when I saw the patient in consultation. From the attending physician I derive the following account of the symptoms and treatment.

On the day first visited by his physician he presented the following symptoms. There was little or no swelling of the shoulder or arm; pain in the left axilla; high fever; pulse between 110 and 20, full and strong; irritability of stomach; nausea; pain on pressure over epigastric region; tongue dry; mind clear; ten grains calomel were given, to be followed by a dose of oil. 21st. On this day there was slight

* Æt. about 26, of spare habit of body, pale complexion, light hair, blue eyes.

swelling of the forearm and back of the hand, restlessness and inability to move the arm; other symptoms same. He was bled from the arm to lbss., and flax tea with a small portion of antim., tart., given, in broken doses.—22nd. The swelling is extending above the elbow; fever higher; worse in every respect. He was cupped on the arm; treatment continued.—23d. His symptoms appeared to be more favourable to-day. He was worse again on the 24th, and I was sent for in the night, but being engaged I did not see him until the next day.—25th. I visited him at half past 9 o'clock, A. M.; he had just been bled from the arm by the attending physician, but he lost only a small quantity of blood on account of a disposition to syncope evinced soon after the vein was opened. The swelling extends now from the fingers to the axilla, and is very tense. The arm appears to be double the natural size; no pulsation can be felt in any part of it; there were vesications underneath from the use of turpentine, and a diffused redness of the skin, owing, probably, to the same cause; pain not very great unless the arm be pressed upon or moved; restlessness; delirium at times; pulse 120, of moderate volume and strength; rational when questions are asked him; countenance anxious; tongue little furred; bowels loose; a blister had been applied over the epigastric region, which had drawn well. It seemed evident that the inflammation had progressed too far to be arrested, and that it must either terminate in suppuration or mortification. We agreed, however, to cup the arm again and give small portions of tart. antim. in flaxseed tea, at intervals; the blood did not flow freely, and very little was obtained. The whole arm was now enveloped in a poultice, and we left him.

26th. We met again; no alteration in his case; his bowels have been freely acted on during the night by a dose of oil, which I did not know had been prescribed. I noticed to-day a dark purple spot above and below the elbow, on the inner part of the arm, which I thought indicated incipient mortification. Omit medicine and continue poultice with farinaceous diet.

27th. Saw him alone. He is evidently worse in every respect, and I clearly saw that he could not survive much longer; he is extremely restless, and has been so during the night, with delirium; picking at the bedclothes; pulse 130 or 40, feeble; tongue dry. The purple spots have greatly extended. In order to relieve the tension, I made, with my lancet, two incisions, one above and the other below the elbow, through the skin, to the extent of two or three inches. I pressed out a considerable quantity of bloody serum mixed with pus. A blister was now applied over the whole arm by the advice of another

medical gentleman who had been called in. He, however, sunk rapidly, and expired at 10 o'clock that night.

After death I extended my incisions down to the muscles, in order to ascertain the seat of the inflammation. The cellular tissue presented so many traces of disease that I did not pursue the dissection farther; it was greatly thickened, and completely infiltrated with the purulent and sanious matter which had escaped before death. The skin of the arm, externally, was of a dark livid appearance.

This case presents us with an example of that variety of inflammation which is known under the name of "diffuse cellular," consequent upon severe horseback exercise, which was obviously the *exciting cause.*

Case II. It was on the 27th of November that I made the above-mentioned partial dissection of the arm of Mr. Crozby. I did this without recollecting that a day or two before I had received a slight wound from the point of my knife on my right forefinger; indeed the wound was so slight that it scarcely attracted my attention at the time it was made. On the 28th I found the wound inflamed and painful, and although I did not really believe it, I mentioned to one or two individuals that I should not be surprised if I had been poisoned. That night I went to bed fatigued, on account of having set up the night before. I did not like the appearance of my finger. At two o'clock in the morning of the 29th I was awoke by a very severe chill and a dull uneasy pain in my right arm-pit. The chill lasted an hour or more, and was succeeded by fever, my pulse rising to 96 in a minute. There was now no doubt on my mind that I was actually poisoned. My first thought was to arrest, if possible, the further absorption of the poison. In order to do this I cut out with my lancet a bit of my finger where the wound was, and applied an alkaline poultice of corn flour, aq. ammoniæ and lye. I had warm applications made to my feet, and drank very largely of warm water alone, with the design of filling my stomach. In the course of two hours I had swallowed three pints. In a short time I was thrown into a profuse perspiration which continued more or less during the whole day. I had a great disposition to chill upon the least exposure. My tongue clean and moist. I now took a dose of castor oil, and in the afternoon of this day, my pulse being still 96, I commenced to take quinine in doses of one gr. every hour or two. I took three or four doses before bed-time. I went to bed at nine o'clock with a moderate fever, and the pain only severe when my arm was moved in certain directions. Slept comfortably until four o'clock on the morning of the 30th, when I awoke and thought I was about to have an ague, but the disposition soon passed off. This day I took regularly one gr. of quinine every

hour, my symptoms being the same as yesterday, which kept up a continued moisture on my skin, my pulse still much above the natural standard. The night of this day I spent comfortably, and the next day, December 1st, I felt so much better that I rode in my sulky the distance of twenty-five miles. I still continued the quinine at longer intervals, and in the evening I added an infusion of aristolochia serpentaria; I still however was not clear of fever, and the pain in the axilla prevented me from using my arm freely. On the 2nd December I kept myself in and took large doses of the serpentaria. On the 3d, 4th, and 5th I visited some patients; on the 6th, however, the pain and inflammation had so increased, no doubt from the exercise, that I found it impossible to go out. I thought I saw that suppuration was inevitable, and I did nothing more than apply warm poultices to the inflamed part. It was six weeks after this before I was able to ride out again, a great part of which time I suffered most excruciating pain and almost constant fever, my pulse frequently ranging between 100 and 120 in a minute. On the 13th of December I thought from the touch that there was a collection of matter, and knowing that it was important to make an early opening, I requested my father-in-law, Mr. L., to open it for me. The swelling was directly in the right axilla. It did not point, and he was somewhat averse to do it: however, upon my urging it, he introduced a lancet, and upon withdrawing it a small quantity of pus, mixed with blood, followed. It continued to discharge from this opening in small quantities until the 18th, when I found that there was a collection of matter which this opening did not seem to reach. I therefore requested Mr. L. to open it in another place a little lower down, at the most depending part of the abscess. Upon doing this three or four ounces of pus immediately escaped, with great relief to me. During the week large quantities of pus escaped from this opening. I was now greatly reduced, and although I sat up the most of the time, yet once or twice upon attempting to get up I was so overcome as nearly to faint. I tried the use of wine, but it always increased my unpleasant sensations; I therefore omitted it and took three or four grs. of quinine a day, which agreed with me very well. The abscess had discharged up to the 25th day of December lbiss. of matter. This day I had chill and fever, with severe pain. The orifice was contracting and the discharge lessened. I now thought it important to make a freeer outlet for the matter, and having directed Mr. L., he introduced a director, and with a bistoury enlarged the opening to the extent of about one inch; a considerable quantity of pus escaped. The next day I was better, and continued to grow better in my general health from that time. My appetite and strength increased daily. The abscess, however, still continued to

discharge, and I had lancinating pains in the course of the lymphatics of the arm when pressed or when I suddenly extended the arm. I had at times also acute pains through the shoulder, and dull pain in the region of the kidneys. My urine deposited a sediment. I rode out for the first time on the 13th day of January. On the 15th the abscess was probed by a physician, when, to my astonishment, the probe was easily passed up to the depth of three inches or more, immediately under the pectoral muscle, where I had always, however, suffered most pain on pressure. The discharge at this time was small, although the cavity was large, for upon elevating and depressing my arm, a rush of air into and out of it could be distinctly heard, producing a perfect "bruit de soufflet." I commenced to treat this sinus with injections of a strong solution of nit. argenti and graduated pressure, by means of a compress and bandage, and continued this treatment until the 6th day of February. The sinus was still two inches in depth, the cavity quite small, when I omitted the injections, still using the pressure. In the course of a week more I found it impossible to introduce the probe and the discharge had entirely ceased. The quantity of matter discharged in all must have been lbij. My health now is very good, although I still have occasional pains in the axilla and shoulder, and in damp weather along the course of the lymphatics of the arm.

I must not omit to state that there frequently passed from the wound, along with the pus, shreds of membrane, which I suppose to have been the cellular tissue. About the time of the crisis of the disease my perspiration had a most disagreeable smell, and at night was frequently so profuse as to moisten the bed clothes.

This is the disease called, improperly I think, by Dr. Good, erythema anatomicum. There may be cases which bear the characteristics of genuine erythema, but the above and most of those which I have seen on record resemble more closely the "diffuse inflammation of the cellular membrane," or "diffuse phlegmon," as it is called by Baron Dupuytren, and the "erysipelas phlegmonodes," I cannot but regard it as being pathologically the same disease.

Case III. As I have hinted above, my father-in-law, Mr. Lelonte,* attended me during my whole illness. He opened my abscess three times, and frequently pressed it, and introduced tents into the orifice, and of course often had his hands in the matter which was discharged.† I heard him complain frequently during the month of December of vertigo, which attacked him when rising up, and often while lying in

* Æt. 55—dark hair and eyes, dark complexion.

† My object in mentioning this will be seen hereafter.

bed. He complained particularly of this during the Christmas holydays.

On the 5th day of January, 1838, he eat very little breakfast, and was engaged during the whole of that day in putting out an extensive fire which had gotten on his lands. He returned home in the evening after fasting all day, of course very much fatigued and exhausted. He eat an unusually hearty supper and went to bed at eleven o'clock, his usual hour. About midnight, or a little after, he was taken with an ague, which lasted two or three hours, attended with vomiting. The matter thrown up was fluid, his supper having been digested completely. His thirst was extremely great, and he took copious draughts of cold water. He had one copious dark coloured evacuation from his bowels. Passed large quantities of urine, which was of a dark colour. I saw him early on the morning of the 6th. His eyes were turgid, no doubt from the effects of vomiting. His pulse 80, full, rather quick—respiration 30. [It is remarkable that during the greater part of his sickness there existed this want of correspondence between the breathing and the pulse, a symptom which I have now so frequently observed to attend unfavourable cases that I cannot but regard it as of importance in forming a prognosis. The reverse, however, of the above I have most frequently noticed, i. e. the pulse more frequent than the breathing.] His skin was soft and moist, and the tongue clean. Perspired little during the night. He complained of feeling very badly, with pains all over his body, but particularly in his back and loins. Considering the circumstances and symptoms of the case, I concluded that it was occasioned entirely by over exertion and eating too heartily the night before, and that abstinence and rest would soon restore him. I advised a gentle cathartic, consisting of one gr. gamboge, one gr. aloes, and one gr. calomel, to be taken tonight, at bed-time.

7th. The cathartic had acted two or three times this morning, and he was apparently so much better that his family left him and went to the distance of eight miles to attend church. On the evening of this day, however, he was evidently worse, he had become very restless and uneasy, complaining still of dull pains over his whole body. I now advised a mustard plaster over the epigastric region. He did not allow it to remain more than 15 minutes before it was removed. His restlesness still continuing, I advised four more on the extremities. These were removed in about the same time after. He was still not relieved, and I gave him then a teaspoonful of paregoric; this seemed to quiet him for a short time. Believing myself scarcely out of danger from my *own* disease I did not sit up with him, but I understand he

was frequently speaking in delirium during the night, and was very restless during the latter part of it.

8th. This morning I found him complaining of severe pain in his right forearm. I examined it, but saw no swelling, or, as I then thought, any symptoms of inflammation. Before evening, however, his forearm had swollen very much, and gave him very great pain. He was very restless the whole day; pulse and breathing as before; anorexia. I made use of every application that I thought by possibility might relieve the pain, but with no effect. The inflammation rapidly progressed, and very soon I perceived purple spots, similar in every respect to those I mentioned in Mr. C.'s case, on the palmar surface of the arm. I covered the forearm in a poultice, and gave him now $\frac{1}{6}$ of a grain tart. antim., and $\frac{1}{2}$ grain opium every hour. This procured a little relief for a time only. This evening was the first time that I felt any alarm for the result. He spent a very uncomfortable night, being restless and delirious.

9th. The swelling was very great, and the purple spots had spread very much. I covered the arm with a blister, and in order to relieve the excruciating pains which he suffered, I gave large doses of acet. morphia, but with no effect. His pulse now rose to 120 or 30 in a minute, became irregular and intermittent; he was delirious and very restless; rational when spoken to. At 12 o'clock I found he was rapidly sinking, and at 5 P. M. he expired. The blister had drawn before death, and there was discharged from the arm a quantity of a dark coloured bloody serum. His left leg, also, about four hours before death swelled to double the natural size, and assumed, like his arm, a purple or livid hue.

This is another case of "diffuse cellular inflammation," and is in all its features so similar to the first case, that I can scarcely resist the conclusion of a common origin, and I am inclined to refer to the probable absorption of matter from my abscess, as the predisposing cause, but which might never have been called into action had it not been for the great exertion and fatigue which he afterwards underwent. This is mere hypothesis, yet it is strengthened by the fact that in another individual, who dressed the abscess, pustules were formed at the extremities of the fingers, and afterwards pain in the left arm, extending up to the shoulder; which, however, was removed after a week with no bad consequences. But I cannot dwell longer on a case connected with so many mournful recollections, and I submit it, with the others, to the notice of my professional brethren, as contributions to the study of an interesting and important disease, whose pathology is but little understood.

Liberty County, Geo., March 10th. 1838.

REVIEWS.

ART. XI. *Elements of Physiology.* By J. MÜLLER, M. D., Professor of Anatomy and Physiology in the University of Berlin, &c. *Translated from the German, with Notes.* By WILLIAM BALY, Member of the Royal College of Surgeons, &c. Illustrated with steel plates and numerous wood engravings. Parts I. and II. 8vo. pp. 591. London: 1837.

This work of Professor Müller presents peculiar claims upon our attention, not only as containing a very able, though concise, exposition of the present condition of physiological knowledge, but to a certain extent as an original treatise upon the more important particulars connected with the science of which it treats.

The author, who ranks among the most distinguished of the practical physiologists of Germany, has not confined himself, in the work before us, to a mere abstract of the facts and opinions recorded by preceding and contemporary writers; but has, in almost every instance, tested the accuracy of these for himself, by repeating the experiments and observations, upon which they are presumed to be founded, or by instituting others better adapted, in his opinion, to a correct elucidation of the subject under examination. By pursuing this course he has been enabled, not only to detect many important errors into which other physiologists have been led, but to throw additional light upon several points connected with the structure and functions of the living organism, heretofore involved in the utmost obscurity.

Paying no respect to the authority merely of a name, however distinguished; distrusting all opinions unsupported by well established facts, and testing by the severest scrutiny the accuracy of every statement made; while in the detail of his own observations and opinions the utmost caution and candour are exhibited, Professor M. may claim the honour of presenting, under the modest title of Elements of Physiology, one of the best and most accurate digests of the science which we possess.

Although his expositions are, in general, sufficiently clear, yet the conciseness with which the vast amount of facts the work comprises are presented, has, in a few instances, given rise to some degree of obscurity, or more properly speaking, renders it difficult, without the closest attention, to understand the conclusion to which the author is desirous of leading his readers. The peculiar character of the present elementary treatise renders it, in fact, scarcely so well adapted for the

use of the mere student, as of those who are already acquainted, to a certain extent, with the science of physiology.

In preparing the present notice we should have preferred making use of the German edition of the work of Professor M., had we been able to procure it; this not being the case, we have been obliged to content ourselves with the translation of Mr. Baly. Of the correctness with which this is executed we have no reason to doubt; it would have been more acceptable to us, however, had the translator confined himself to his legitimate province, and not attempted any alteration of, or omissions from, the author's text.

"In some instances," we are told, "the order in which the facts, and inductions from them, are stated, has been altered, that their connection might be easier of comprehension. In other cases it has been deemed adviseable to omit from the text, and to place in the form of notes, discussions on subjects which, though interesting, did not appear to come within the limits of what is necessary or desirable in a text book on human physiology, particularly when they formed a digression which tended to interfere with the course of the student's reading; some *few paragraphs have been entirely omitted*, chiefly with the view of avoiding unnecessary repetition."

The latter is especially reprehensible. In all instances we consider it to be of some importance that every thing contained in the original text, should be retained in the translation, in the same form and manner as given by the author.

The notes, or rather additions, made by the translator, are particularly judicious, consisting almost entirely of newly discovered facts, which, however, from the completeness of the original work, are but few in number.

The arrangement of the several subjects embraced by the science of physiology, adopted by Professor M., is somewhat novel, though probably as natural and judicious as any other that could be suggested; after a prolegomena on general physiology, the leading fault of which is its conciseness, the consideration of special physiology is introduced by an examination of the circulating of fluids, their motion, and of the vascular system, which is the subject of the first book. The second book is devoted to a consideration of the chemical changes produced in the organic fluids, and organized textures under the influence of the vital laws, including respiration, nutrition, growth and reproduction, secretion, digestion, chylification, and the excretion of the decomposed effete matters. These are all the subjects treated of in the first two parts of the translation, which are the only portions of the work that have reached us.

It is impossible within any reasonable limits to attempt, even had we the inclination, either a critical review or continuous analysis of a work of the peculiar character of the one before us; comprising so large an amount of important matter, and so many points upon which a discrepancy of opinion exists among the most distinguished physiologists; all that we can promise to our readers is a brief notice of some of the leading particulars to which the investigation of the author has been more especially directed.

As we have already remarked, Professor M. commences the subject of special physiology by an examination of the circulating fluids, and first of the blood.

There is a great want of accordance in the descriptions which writers have hitherto given of the red particles of the blood, hence that presented by the author, which is the result solely of his own repeated and accurate observations, is particularly interesting.

For the purpose of microscopic examination, Professor M. directs the blood to be either diffused thinly over the surface of glass, or diluted with some serum, or with a weak solution of common salt or sugar; which solutions produce no change in the appearance of the red particles; it is principally to the blood having been diluted with water, which immediately changes the form of its red particles, that the author imputes the errors into which others have fallen in their descriptions of them.

"Their form," he remarks, "in different animals is very various; but whether they be elliptical or circular, they are always flattened. In the mammalia, including the human subject, they are circular disks. In the calf, cat, dog, and rabbit, as well as in man, Professor M. has convinced himself that they are flattened, as well as in birds, reptiles, and fishes. In birds, reptiles, amphibia, and fishes they are elliptic. In some fishes they are more nearly circular, but never perfectly so. In reptiles, amphibia, and birds, the long and short diameter of the red particles are about in the proportion of two to one." "In human blood their thickness is about one-fourth or one-fifth of their transverse diameter. The flattening is greatest in reptiles, amphibia, and fishes; and of all animals is most remarkable in the salamander. In birds, also, the red particles are decidedly flattened; but not to so great a degree as in amphibia. In the frog, the red particles, the thickness of which does not measure more than one-eighth or one-tenth of their long diameter, present, when seen edgeways, a slight prominence, rising from the centre of each lateral surface. In other animals, even in the salamander, Professor M. has observed no prominence of this kind. R. Wagner, however, has observed it in many other animals, both reptiles and fishes.

"In the centre of each red particle is a spot, which in the circular bodies is circular, in the elliptic also elliptic; on the illuminated side of the particle it appears light, on the opposite side dark. This spot has sometimes—I may say, indeed, has always in the elliptic globules—the appearance of being produced by a central nucleus, especially when the particle is brightly illuminated, and all shadow avoided. By a less brilliant light this central spot suggests rather the idea of an elevation; and this is particularly the case in the frog. It has not at all this appearance in the salamander, nor in birds or fishes. As the red particles in birds, salamanders, and fishes, generally present no appearance of an elevation on their flat surfaces when they are rolling over on their edge under the microscope, it is evident, our author concludes, that in them this central spot cannot be produced by an elevation, and must be referable to the central nucleus, which all these bodies contain," to which is also to be attributed the slight lateral prominence observed by Wagner in the particles of frog's blood, and in those of many other animals when seen edgeways.

In the red particles of mammalia, the central spot never appears elevated, on the contrary, they have sometimes, by a certain light, the appearance of being very slightly excavated from the border towards the centre. This appearance is regarded by Dr. Young as a

real depression; this, Professor M., however, considers improbabl having satisfied himself that each of their bodies contains a small nu cleus, equal in thickness to the red particle itself. Even in the re particles of human blood he has seen a minute, round, accurately de fined nucleus, which had a more yellowish and shining aspect tha the transparent part around it.

"The size of the red particles in human blood is pretty uniform; some fe are larger, but none have twice the diameter of the majority. In the frog als their size is for the most part equal; some, however, without differing in an other respects, are somewhat smaller than the rest, and appear to Professor M to be, as it were, in the process of formation. Prevost and Dumas have foun the red globules in the embryo to be larger than those of the adult animal. I the embryo of the rabbit their dimensions are very unequal; the greater numbe are quite as large as in the adult, and a few are more than twice that size. I the tadpole the same bodies appear to be somewhat smaller than in the frog and are much paler. The red particles of amphibia are stated by our author t be the largest he is acquainted with; in birds, reptiles, and fishes, they ar smaller; in mammalia, smallest; and among mammalia those of the goat a the most minute.—In the calf they are rather smaller than in man. The re particles of frog's blood being taken as a standard of comparison, and observe under the microscope, side by side with those of other animals, it is found tha those of birds are about one half the size of those of the frog; that the red pa ticles of the salamander are somewhat larger, not so much as one-third larg than those of the frog, they are rather more elongated; those of the lizard con pared with the same bodies, are found to be about two-thirds the size, whi the circular particles of human blood measure only one-fourth the long diam ter of the elliptic particles of frog's blood. The red particles in man Profess M. has found to measure from 0.00023 to 0.00035 of an inch French, in diam ter."

The measurement of the red particles, given by different physiolo gists, with the exception of Sir E. Home and Mr. Bauer, are within o very nearly within the limits assigned above by Professor M.

That the red particles are composed of small colourless nuclei wit an envelope of red matter, has been clearly demonstrated by the ex periments of our author.

The suppositions of Sir E. Home, that the red particles underg rapid decomposition in blood drawn from the body, he has ascertain ed to be altogether erroneous.

"The blood of a mammiferous animal from which the fibrin has been remove by brisk stirring, retains all the appearance of fresh blood, and the red particle remain suspended in it, with no change of their form or size discoverable b the best microscope after the lapse of several hours, or even on the followin day."

By mixing blood deprived of its fibrin with a considerable quantit of water, the colouring matter of the red particles is dissolved. I proportion as the water becomes tinged with the colouring matte the elliptic particles of frog's blood lose their envelope, and becom smaller and smaller, until the colourless nuclei alone remain These nuclei are not further soluble in water, but form at length mucous matter at the bottom of the vessel, still consisting of the sam granules.

The instantaneous effect of water on the red particles is very re-
narkable, changing their form, rendering them uneven on the surface,
ınd displacing the nucleus. In some, the nucleus is removed from
he centre to the side of the particle—in a few it will be found entirely
vanting. In these cases it seems, our author remarks, as if the violent
hange produced in them by the water had caused the expulsion of
he nucleus; for, besides those globules which have lost their nuclei,
ı few nuclei without envelopes can also be seen strewed over the
ield of the microscope. Water, as Berzelius remarks, dissolves the
olouring matter in all proportions.

"Water in which carbonate of potash, common salt, sal ammoniac, or sugar
ıas been dissolved, produces no change in the size and form of the globules;
ınless it be a saturated solution of carbonate of potash, which seems to produce
ı slight and gradual diminution of their size."

"If, instead of water, dilute or concentrated acetic acid is used, the elliptic
articles immediately become irregular in form, and some are rendered globular.
The red colouring matter is in a few minutes almost entirely dissolved, leaving
mall bodies not more than one-third or one-fourth the diameter of the original
ed particles. These are not globules contracted by the action of the acid, but
uclei deprived of the red colouring matter. The colouring envelope is not,
owever, wholly dissolved; for, with the Fraunhofer microscope, Professor M.
ould still distinguish a delicate, exceedingly pale line, surrounding the central
ucleus. The outline of these bodies is the same as that of the red particles;
n those obtained from frog's blood, Professor M. could not distinguish any
attening, but those from the salamander's blood are as distinctly flattened as
he red particles themselves. The length of the nuclei from frog's blood is the
ouble of their breadth; some few, however, approach the circular form. In
he red particles of the salamander, the nuclei are more elongated, their lateral
orders are more parallel, while their extremities are rounded. By means of
cetic acid, the extremely minute nuclei of the red-particles of the blood of
ıammalia can be rendered visible, but the most careful manipulation and a
ery clear instrumant are reqiured for the experiment."

"Muriatic acid does not dissolve all the colouring envelope; it diminishes
ıe size of the red particles very slightly. Chlorine destroys the colour; the
og's blood becomes first brown, afterwards nearly white, like milk: the albu-
ıen at the same time coagulates into globular granules. If this white matter
examined by the aid of a microscope, the form of the elliptic particles of the
lood can still be distinguished in it, but they are somewhat smaller. The
ırm of the red particles is not affected by oxygen or carbonic acid. Liquor
otassæ dissolves the red particles very quickly—the nuclei as well as the
olouring envelope—without previously changing their form. The solution is
ffected still more rapidly by liquor ammonia, and is also complete; but at the
oment of mixture, the red particles become globular. Alcohol merely pro-
uces slight contraction of them,—and the globules of albumen, produced by
ıe coagulation of the serum, cloud the field of vision and render the red parti-
es indistinct. Strychnine and morphia produce no change in them."

The nuclei of the red particles in their insolubility in water, their
ifficult solubility in acetic acid, and their complete solubility in
olutions of the alkalies, resemble coagulated fibrin and albumen,
xcepting that the latter substance is more soluble in acetic acid.

The size and form of the red particles are the same in arterial and
venous blood.

There is nothing, it is true, absolutely novel in the foregoing description of the red particles. The carefulness, however, with which the observations of Professor M. were conducted, and the fact that they confirm the accuracy of the account of those bodies given by Mr Hewson in 1774, render them particularly interesting and important. Mr. Hewson, whose admirable description of the red particles of the blood has been almost entirely overlooked by subsequent physiologists in consequence of the imposing but erroneous statements of Sir E. Home and Mr. Bauer in England, and Prevost and Dumas in France, ascertained as the translator of the work before us very correctly remarks, with certainty, that the red particles are flattened in man and quadrupeds, as well as in other vertebrate classes. He observed that their size does not correspond with the size of the animal, but is smaller in quadrupeds than in birds, and in birds than in fishes, and that they are larger in the young of the viper and common fowl than in the adult animals. He knew the advantage of diluting blood with serum. His experiments to prove that the central spot is produced by a solid nucleus are especially interesting, since they show that he was fully aware of the changes produced on the red particles by the action of water. The property which serum possesses of not dissolving the red particles, or altering their shape, he attributed chiefly to its saline ingredients, and proved by experiment, that solutions of neutral salts, if not too concentrated, have the same property as serum in this respect. The originality of Professor M.'s investigation of the red particles, consists principally in his employing blood from which the fibrin had been removed; and in his ascertaining the action of different substances, particularly the gases upon them.

The red particles of the blood are generally viewed as mere globules of fibrin enveloped in a coating of red colouring matter, and the coagulation of the blood as resulting from their aggregation; the whiteness of the clot when washed being supposed to be caused by the removal of the red enveloping matter, so as to leave merely the nuclei of fibrin. This explanation of the process of coagulation was proposed especially by Sir E. Home, and Prevost and Dumas, and still more recently by Dutrochet. Professor M. has, however, exposed fully its inaccuracy. He has shown, most conclusively, that the fibrin exists in the blood in a state of solution, and remains in the latter after the entire removal of the red particles. Knowing that the red particles of frog's blood are four times the size of those bodies in the blood of the mammalia, he conjectured that although the red particles of the latter animals pass through filter paper, those of the frog might not; which opinion he found correct, and thus he was enabled to show by an easy experiment, that fibrin is held in solution in the blood; that it passes limpid through the filter, and then coagulates. The fibrin of the blood is in this manner obtained in a purer state than is possible by any other method. There is no distinct appearance of granules in the fibrin thus obtained,—it is quite homogeneous; when it has contracted and become white, it acquires a finely granulated aspect. This appearance, which it presents when viewed with the compound microscope

may, however, according to our author, arise merely from unevenness of the surface.

"There is still another mode of proving that fibrin exists dissolved in the blood of the frog as well as of mammalia. By adding to the blood of man or any vertebrate animal, some drops of a very concentrated solution of carbonate of potash, coagulation is retarded, so that the red particles have time to subside. In the space of half an hour a soft coagulum forms, of which the lower part, containing the red particles, is red, while the upper part is white."

Professor M. has tested the proportion of fibrin that exists in the blood. From 3,627 grains of bullock's blood he obtained, by stirring, 18 grains of fibrin. The crassamentum of 3,945 grains of the same blood weighed, when dried, 641 grains. So that in 100 parts of the blood of this animal there were 16.248 parts of dry crassamentum, and 0.496 parts of fibrin. Fourcroy estimates the quantity of dry fibrin in 1,000 parts of blood at from 1.5 to 4.3. Berzelius calculated that it was 0.75; while Lassaigne found it to be 1.2. In twenty-two experiments Lecanu found, that the proportion of dry fibrin in 1,000 parts of human blood varies from 1.360 to 7.235 parts.

To determine the proportion of fibrin in arterial and venous blood, Professor M. extracted 1,392 grains of blood from the jugular vein of a goat, and shortly afterwards 3,004 grains from the carotid. The two kinds of blood were stirred separately, so as to remove the fibrin, care being taken that none was lost. The arterial blood yielded 14½ grains, the venous 5½ grains of fibrin. So that in 100 parts of arterial blood there was 0.483; in the same quantity of venous blood 0.395 of fibrin. Denis gives the proportion of fibrin in arterial and venous blood as 25 to 24. Berthold found the proportion in the goat to be as 429 to 366; in the cat as 521 to 474; in the sheep as 566 to 475; and in the dog as 666 to 500. The mean result of the foregoing experiments is that the quantities of fibrin in arterial and venous blood are in the proportion of 29 to 24.

According to Professor M. the principal causes of the subsidence of the red particles, and the formation of the buffy coat in inflammatory blood, appear to be the slow coagulation of the blood, and the increased quantity of fibrin it contains. He ascertained that while the red particles begin to subside in healthy blood as soon as it is drawn from the body, they sink very slowly in blood deprived of its fibrin, even though it be inflammatory. He likewise ascertained that the subsidence of the red particles is more rapid in the blood of man and of the cat, of which the coagulation has been retarded by the addition of carbonate of potash. Thus, by retarding in this manner the coagulation of blood, he was able to give rise to the process by which the inflammatory crust is formed; the only difference being, that the fibrin which formed the artificial crust was, in consequence of the chemical effects of the alkali, soft and glutinous.

"The cause of the unequal contracting of the two parts of the crassamentum is, that the lower portion of the fibrin is kept mechanically extended, as it were, by the red particles which it contains, while in the upper there are none of those bodies to prevent its close contraction. It must, however, be understood that fibrin is present and coagulates in all parts of the clot."

The author's account of the serum of the blood,—of the compositi of the blood in the different sexes, ages, and temperaments,—and h entire chapter on the chemical analysis of the blood, are replete wi interesting matter, which we regret our limits will not permit us notice.

The third chapter of the first book, is on the analysis of the bloo by galvanism, in which a long detail of experiments are given to di prove the views of Dutrochet, who supposed that he had been able form muscular fibres from albumen by the agency of galvanism, an that the red particles of the blood constituted each a pair of plate the nucleus being negative, the envelope positive.

"All the appearances, remarks our author, which Dutrochet has attributed different electric properties of the blood are explicable by the precipitation the albumen and fibrin, in consequence of the decomposition of the salts of th serum, and of the oxydation of the copper wire used in the experiments—bo the decomposition of the salts and oxydation of the copper being the usu effects of galvanic action."

After a few remarks, in the ensuing chapter, upon the vivifyin influence of the arterial blood, Professor M. observes that this powe of the blood, as is shown by the experiments of Prevost, Dumas, an Dieffenbach, does not reside so much in the serum as in the red pa ticles. Thus, when an animal is bled to syncope, it is not revived b the injection of water or pure serum, but only when blood of anothe animal of the same species is used. The same experimenters als state that revival takes place equally when the blood injected has bee deprived of its fibrin, in which blood, as Professor M. has shown, th red particles remain perfectly unchanged; hence he recommends tha blood from which the fibrin has been removed, and heated to the prope temperature should be employed in the few cases where the transfu sion of blood is justifiable or necessary, on account of hemorrhage; a in this state the blood is completely fluid and remains so, and thu the principal difficulty of transfusion, the ready coagulation of th blood, in passing from one animal to another, is avoided.

"Blood of animals of a different genus, of which the corpuscules, though the same form, have a different size, effects an imperfect restoration, and th animal generally dies in six days. The injection of blood with circular co puscules into the vessels of a bird, (in which the corpuscules are elliptic an of large size,) produces violent symptoms, similar to those of the strongest po sons, and generally death, which ensues, indeed, instantaneously, even when small quantity only of the blood has been injected; such, for example, was th effect of the transfusion of some blood of the sheep into the veins of a duc while in many cases in which the blood of sheep and oxen was injected in the veins of cats and rabbits, these animals were revived for a few days. T fact of the blood of mammalia being poisonous to birds is very remarkable; cannot be explained mechanically. The injection of fluids containing globul of greater diameter than the capillary vessels, produces death by obstructi the pulmonary vessels, and producing asphyxia; but the corpuscules of th blood in mammalia are even smaller than those of birds. In Dieffenbach numerous experiments, pigeons were killed by a few drops only of the blo of mammalia. The blood of fishes is said to be fatal to mammalia as well to birds."

Professor M. denies the supposed automatic motions of the corpuscules of the blood described by Schultz and other physiologists. He has, he remarks, during the last ten years, examined the circulation of the blood in the most various parts, at every opportunity, and with different instruments, but has never, when the object was well illuminated, observed the constant assimilation, disappearance, and new formation of the globules described by Schultz, nor have Rudolphi, Purkinje, Koch, and Meyen been more successful. The notion of Eber and Mayer, that the red particles are infusory animals, our author considers still less admissible. He denies, likewise, the theory which ascribes to the blood a self-propelling power, which continues after the heart has ceased to act.

The confused motion of the globules which is seen to continue for several seconds in a drop of blood placed in a glass under the microscope, and which is regarded by Treviranus, Meyer and others, to be an automatic movement, Professor M. refers altogether to physical causes, such as evaporation, slight change of form, the attraction of adhesion, &c. That they cannot be dependent upon vitality is evident from the fact that he has distinguished them in blood deprived of its fibrin twelve or twenty-four hours after it has been taken from the animal.

Professor M., nevertheless, contends that the blood is endowed with life, inasmuch as its action cannot be comprehended from chemical and physical laws. It exhibits organic properties, being attracted by living organs which are acted on by vital stimuli; between the blood and the organized parts there subsists a reciprocal vital action, in which the blood has as large a share as the organs in which it circulates. The fibrin of the blood effused in inflammation is at first fluid, and forms, as it becomes solid, pseudo-membranes; and this exudation, by means of a mutual vital action exerted between it and the organs by which it is poured out, becomes organized and traversed by blood and vessels. The blood itself has, therefore, our author remarks, the properties of life, and this is the case with all the animal fluids except those which are the means of carrying out of the body the effete material, such as the urine and carbonic acid. The saliva and the bile exert an assimilating action on the food, the different organs perform the same functions with regard to the blood, and here there is no clearly defined limits between substances capable of life and those endowed with it. Those substances, however, in which life is least evident, remain susceptible of life as long as they are not chemically changed.

The author presents an interesting general view of the formation of the blood; from this we shall only extract one or two paragraphs as exhibiting his views in relation to the functions of certain important organs.

"In what part of the system the red colouring matter or envelope of the red particles of the blood is produced is quite unknown; it is not present in the chyle and lymph; a slight trace of it only being sometimes detectable in the thoracic duct. Respiration seems to have a share in its production. Hewson's hypothesis, that the red colouring matter is formed in the spleen and in the lymph of the spleen, which is sometimes of a dirty red colour, is without

foundation; the spleen may be extirpated from living animals without bad consequences."

After remarking upon the functions of the lungs, and that the absorption of oxygen and the separation of a portion of carbon effected by these organs, are the causes to which arterial blood owes its property of being the sole stimulus of living structures, the author examines the influence of the excretions upon the formation of the blood.

"The separation from the blood, he observes, of certain matters which are afterwards excreted from the animal economy, has a great share in preserving the normal condition of the circulating fluid. Some of the matters here alluded to have been introduced from without, and are either in themselves useless, or are in too abundant quantity. Of these water is got rid of by exhalation from the lungs and skin, and by the urine; the mineral substances are expelled chiefly by the urine; and matters containing an excess of carbon, nitrogen, oxygen, or hydrogen, are eliminated in various ways—the carbon by the lungs; combinations containing much carbon and hydrogen, by the liver; and those in which nitrogen is abundant, by the kidneys. Other of the substances that disturb the normal constitution of the blood, are newly formed in the body, and, being taken up into the blood, must be subsequently excreted from it. Such seem to be several of the matters contained in the urine. This shows how the proper composition of the blood, when once established, is maintained."

"By means of the skin the blood throws off lactic acid, lactate of ammonia, muriate of ammonia, and carbonic acid. Lactic acid, which also passes off by the urine, is, according to Berzelius, a universal product of the spontaneous decomposition of animal matters within the living body."

The following remarks upon the office of the bile are interesting, and in our opinion strictly correct.

"The fact of the bile being poured, both in vertebrata and in mollusca, into that part of the intestinal canal where the formation of the chyme is completed, proves that it is not excrementitial merely; besides, its most abundant component, picromel, has evidently some connection with the assimilation of the chyme, for it is not found in the fæces. Some, however, of the components of the bile, are certainly excrementitious matters thrown off from the blood, and these are essential components of the fæcal matter. Such are the resin of the bile, cholesterine, and the colouring matter of the bile, of which no traces are found in the chyle. The liver, therefore, frees the blood from an excess of matters containing carbon and hydrogen, and from fatty matter, while the kidneys remove from it the superabundance of those materials which contain a large proportion of nitrogen. The colouring matter of the bile, which is also excrementitious, contains nitrogen. The lungs and liver are so far analogous, inasmuch as both separate from the blood substances containing a large proportion of carbon. In the former case, however, it is already combined with oxygen, in the latter case it is still in the oxydizable state. Earlier physiologists, and more recently Autenrieth, and particularly Tiedemann and Gmelin, have directed attention to a certain vicarious action in the functions of the lungs and liver. Although it does not appear that the size of the liver is throughout the animal kingdom in the inverse ratio of the size of the respiratory organs, yet pathological observations are certainly in favour of the existence of such a relation."

The next section treats of the circulation, and of the vascular system. The first chapter, which embraces an anatomico-physiological account of the various forms of the vascular system in the animal kingdom, is replete with instruction; the description of the modifications of the circulatory apparatus in the inferior classes of animals

being a useful introduction to the study of that apparatus, and of its actions in man.

In regard to the impulse of the heart, or the shock communicated by the apex of the heart to the walls of the thorax in the neighbourhood of the fifth and sixth rib, which had been generally attributed, until very lately, to the contraction of the ventricles, Professor M. remarks—

"Corrigan, Stokes, and Burdach, have very recently advanced the doctrine that the impulse of the heart is produced by the distension of the ventricles at the moment that it is brought to its greatest degree by the contraction of the auricles. To inform myself, if possible, whether this view is correct, I made some experiments on a goat whose thorax was opened during life; Professor Albers was present. Our observations, however, did not convince us that the opinion of Corrigan, Stokes, and Burdach, is the correct one; on the contrary, while the animal lay on its back, we saw distinctly that the heart was elevated at every contraction of the ventricles, and the apex particularly. When the hand was laid upon the heart, the shock during the contraction of the ventricles was so forcible and instantaneous, that it seemed impossible to attribute the heart's beat, or the impulse against the ribs, to any other cause, while during the diastole we felt no shock. The heart does not, however, recede from the thoracic parietes during the diastole. During life, the heart lies with its apex close to the walls of the chest, and the shock communicated to these walls by the heart by the contraction of the ventricles is felt externally, constituting the heart's impulse; to give the shock the heart does not require any great change of position."

Professor M. maintains, in opposition to the opinions of some highly respectable physiologists, that the contraction (systole) only of the heart is an active state; the dilatation (diastole) being the moment of repose, in which the fibres are relaxed, and in which the blood is poured from the contiguous veins into the cavities of the heart, to fill the vacuum consequent on the relaxation of its fibres; the valves of the heart being so arranged as to allow the influx of the blood from the veins. Bichat, and some other French physiologists, have supposed the dilatation of the heart to be an active movement; this supposition Oesterreicher has refuted by a very ingenious experiment.

"He removed the heart of a frog from the body, and laid upon it a substance sufficiently heavy to press it flat, and yet so small as not to conceal the heart from view; he then observed that during the contraction of the heart the weight was raised, but that during dilatation the heart remained flat. This experiment shows that the dilatation of the heart is not a muscular act; at the same time, however, it must be recollected that the walls of the heart, during life, cannot become so relaxed at the time of the diastole, as in a heart removed from the body, even although the cavities of the heart were not filled with blood; for during life, the capillary vessels of its substance are, at the time of relaxation, injected with blood, which, during the contraction, is pressed out of them, and this filling of its vessels must give it some degree of firmness and rigidity."

The next chapter, devoted to the consideration of the heart's action, and of the influence upon it of respiration, of the nerves, and of the brain and spinal marrow, presents, in a very concise form, the leading facts connected with these points; from these the author concludes that the influence of the nerves seems to be the cause of the heart's contractions, an opinion which is confirmed apparently by the

great effect which irritations of the brain and spinal marrow, and passions of the mind have in modifying the action of the heart.

"The heart is not so much dependent on the influence of the brain and spinal marrow that the removal of these organs immediately annihilates its power of motion. The cardiac nerves, under such circumstances, still retain a portion of the motor influence, and even the small part of these nerves which can be contained in the heart cut from the body, still retains sufficient nervous power to continue its motions for a short time. But the brain and spinal marrow must, nevertheless, be regarded as a principal source of the nervous influence, for their destruction enfeebles the heart's action to such a degree that, although it is continued for a considerable time, its force is not sufficient to keep up the circulation."

Speaking of the immediate influence of the sympathetic nerve on the heart's action, Professor M. remarks that

"Not only the brain and spinal cord, but all the organs in their state of vital action, and consequently the whole system, react upon the sympathetic nerve through the medium of the nervous fibrils accompanying the blood-vessels, and excite its peculiar motor power. The constant source of the heart's contractility is, therefore, *primo loco*, the motor power of the sympathetic nerve. But the maintenance of this power, and its excitement, is dependent not only on the brain and spinal cord, but probably on the vital stimulus transmitted by all the organs of the body through the medium of the nerves accompanying the vessels to the central portions of the sympathetic. Hence it is that a local disease is able to excite general feeling of illness in the whole body, and a very violent local disease can affect the heart's action and the pulse. The modifications which the minute radicles of the sympathetic in any part undergo from violent local disease, and the reaction of these modifications on the central parts of the sympathetic system, the cardiac nerves and the plexuses, as well as on the brain and spinal cord, seem to have a main share in the phenomena which we call fever."

The arterial pulse Professor M. refers to the pressure exerted by the blood at each contraction of the ventricle on the elastic coats of the artery, and causing thus their extension; the artery recovering its former state during the diastole, by virtue of the elasticity of its coats. The extension of the arterial coats, he remarks, takes place both in length and in the direction of their diameter, but the elongation is by far the most considerable. A necessary consequence of their elongation is that they change their position, and become curved; but they straighten themselves to recover their original situation when the ventricular contraction has ceased.

As our readers are aware, it has been denied by Rudolphi, Laennec, Arthaud, Parry, Doellinger, and other physiologists of equal note, that the arteries undergo any dilatation; while Bichat, Von Walther, Tiedemann, Meckel, Hasting, Magendie and Wedemeyer, contend that a dilatation of the arteries does take place upon the contraction of the heart. Professor M. observes, that in the entire course of the pulmonary artery in the lung of the frog, the dilatation, as well as the incurvation of the vessel, can be seen with the greatest distinctness. He has likewise witnessed it in the abdominal aorta of the frog, and once quite satisfactorily in the aorta of the rabbit. The dilatation must, however, he adds, be less considerable than the elongation, for it is not always observed with distinctness.

It was asserted by Bichat, and is commonly admitted, that the pulse is synchronous in all the arteries of the body, whatever their distance from the heart; this Professor M., in common with Weitbrecht, Liscovius and Weber, denies.

"The pulsation of the arteries near the heart, he remarks, is synchronous with the contraction of the ventricles. But at a greater distance from the heart, the arterial pulse ceases to be perfectly synchronous with the heart's impulse, the interval varying, according to Weber, from one-sixth to one-seventh of a second. Thus the pulse of the radial artery even, is somewhat later than that of the common carotid. The pulse of the facial, at about the same distance from the heart, is isochronous with the pulse in the axillary artery, while the pulse is felt somewhat later in the metatarsal artery on the dorsum of the foot than in the facial artery and common carotid."

Weber explains this by the modification in the action of the heart upon the blood contained in the arteries, resulting from the extensibility of the elastic coats of the latter; a certain interval of time, although a very short one, elapsing, before the undulatory motion, communicated to the blood by its successive compression, and the contraction and dilatation of the arteries, reaches the most distant branches of the arterial system. Weber compares this action to the propagation of the undulations that are produced by a stone thrown into a lake; in which case likewise the undulations are not transmitted with the velocity of sound.

"The rapidity of the transmission of undulations in water twenty-three inches deep, is, according to the experiments of E. and M. Weber, five and a half Paris feet in a second. Bichat confounded the motion of the undulations in a river with the movement of the water itself, and believed the pulse to be produced not by the progressive undulations, but by the impulse communicated at the same moment to all the arterial blood. The motion of undulations always depends on the oscillations transmitted from the point where the impulse is applied, and never on the progressive motion of the fluid itself."

"The arterial pulse, then, we may conclude, is the effect of the oscillations propagated along the coats of the arteries, and in the blood itself, from the impulse communicated to the blood by the heart."

Professor M. denies explicitly the muscular contractility of any portion of the arteries, and adduces the arguments which disprove their muscularity; the difference, namely, in the chemical characters of the coats of the arteries and those of muscular fibres, the continuance of their power of contracting after extension subsequent to death, and the fact pointed out by Berzelius, Nysten, Bichat, and Wedemeyer, and confirmed by the experiments of the author, that the strongest galvanic and electric stimuli, which produce contractions in all true muscular structures, excite not the smallest motion in arteries. In regard to an argument occasionally urged for the muscularity of arteries, that the pulse, namely, in corresponding limbs sometimes differs in strength, for example, in paralysis, the author remarks:

"Here there are other local causes present to explain this anomaly. In paralysed limbs, the mutual vital reaction between the blood and the solids is diminished, they are lax and shrivelled, and often less nourished; while, on the contrary, in active congestion, the increase of the vital processes going on between the blood and the texture of the parts, the increased organic affinities, induces a greater flow of blood to the part, and a consequently stronger pulse.

In inflamed parts, in which there is an accumulation of blood and impeded circulation through the capillaries, the strength of the pulse is increased. But there is no credible authority for the assertion that the pulse ever differs in frequency in the different parts, and it is inconceivable how writers in these days can repeat fables without examining into their accuracy."

While the author denies that the circulation is in any way dependent upon periodic muscular contractions of the arteries, he, nevertheless, admits with Parry, Weber, and Tiedemann, that the narrowing of arteries observed in arresting hemorrhage from them by exposure to the air, and in the operation of torsion, is dependent upon an insensible vital contractility of those vessels which operates gradually. This property of the arteries was first demonstrated by Schwann, who, in applying a few drops of cold water to the mesentery of the frog and other animals, extended under the microscope, observed the contraction of the vessels speedily to occur, and gradually increase, until at the expiration of ten or fifteen minutes the diameter of the canal of an artery in the mesentery of a toad, which was at first 0.0724 of an English line, was reduced to 0.0276. The diameter being thus reduced to one-half or one-third the area; consequently to one-fourth or one-ninth of its previous dimensions.

"The arteries then dilated again, and at the expiration of half an hour had acquired nearly their original size. By renewing the application of the water the contraction was reproduced; in this way the experiment could be performed several times in the same artery. The vital property of tonicity, which gave rise to these phenomena, will very well explain the partially empty state of the arteries after death; for the arteries, after a certain time, must lose the vital power of gradual contraction by which they had expelled their blood, and would again dilate, retaining merely their physical endowment of elasticity, which is not lost until decomposition takes place."

The term capillary vessels is applied by Professor M. to the minute reticulated vessels, connecting the arteries and veins. The point at which the arteries terminate and the minute veins commence, cannot, he remarks, be exactly defined, the transition being gradual; but the intermediate net work has, nevertheless, this peculiarity, that the small vessels which compose it maintain the same diameter throughout; they do not continue to diminish in diameter in one direction and enlarge in the opposite direction, like arteries and veins. This, however, does not justify us in admitting with Bichat, that the capillaries are a peculiar set of vessels distinct from arteries and veins.

The size of the capillary vessels is proportioned to that of the red particles of the blood, and can be measured in parts finally injected. Their diameter varies from the one to the four, or even the five thousandth part of an inch; but in the mean is most frequently between the thirty-seven hundredth and the eighteen hundred and fiftieth part of an inch; hence there are no other tubes in the body so minute as the capillary vessels, nor any other of the elementary tissue much more minute.

The author presents some highly interesting observations on the form of the capillary net work, and the number of the capillaries and size of the meshes in different parts, an abstract of which, much

to our regret, our limits will not permit us to present; we can only notice the statement, that the parts in which the net work of capillaries is the closest, that is, in which the meshes are the smallest, are the lungs and the choroid membrane of the eye, while the bones, cartilages, ligaments, and tendons are the parts which have the smallest number of blood-vessels and capillaries. At the line limiting muscle and tendon, the great difference in the vascularity of the two parts is very observable; the greater number of the blood-vessels of the muscles, are, according to Doellinger, reflected back again, and have no immediate connexion with the scanty vessels of the tendons. Professor M., from some injections of the peritoneum by Bleuland and those in the possession of Van der Kolk, has reason to believe that blood-vessels exist in the internal shining layer of the peritoneum, which has hitherto been doubted.

On the question—Have minute arteries open mouths? Professor M. assumes the negative. He remarks that,—

"Microscopic observations and minute injections have shown that the capillary vessels are merely the fine tubes which form the medium of transition from arteries to veins, and that no other kind of vessel arises from them; that the minute arteries have no other mode of termination than the communication with the veins by means of the capillaries; in a word, there are no vessels terminating by open extremities."

"The existence of exhalent vessels also, which even Bichat admitted, and supposed to be open side-branches of the capillary vessels, is purely hypothetical. An exhaling membrane, such as the peritoneum, has merely reticulated capillary vessels spread out over a great superficies, and the fluids are exhaled into the cavities by permeating the substance of the organ itself, all animal textures being permeable to fluids by virtue of the pores which, though not visible, must necessarily exist even in the smallest molecules of the animal substance which are capable of being softened by fluids. It is owing to this porosity that when arteries are injected with a solution of size coloured with cinnabar, a colourless fluid exudes on the surface of the membranes, as was pointed out by Mascagni, the colouring particles not being able to pass through the pores."

The author admits the possible existence of serous vessels, or branches of the blood-vessels, which are too minute to allow the passage of the red particles, although no such vessels have as yet been demonstrated. He is inclined to believe, however, that many of those parts which have been supposed to be supplied only with these serous vessels, actually possess vessels which transmit the red particles equally with the lymph of the blood—such as the cornea and the capsule of the lens; it is certain, he observes, that the capsule of the lens of the eye of the ox, as well as the corneal conjunctiva in the fully developed fœtus of the sheep are supplied with red blood.

"The vessels of the corneal conjunctiva are certainy infinitely less numerous than those of the sclerotic conjunctiva; there is the same difference between these two parts as between that part of the synovial membrane which is free, and that which covers the articular cartilages. E. H. Weber remarks, very correctly, that a single stratum of capillary vessels is not at all recognisable by the eye alone; the colourless appearance of the parts of which we have been speaking, consequently, does not prove that they contain no blood-vessels.

The mesentery, also, in the space between the large vessels, appears to the naked eye, to be equally free from vessels, and transparent, but by the aid of the microscope the capillaries become evident in it."

The important question—Have the capillaries membranous parietes? the negative of which has been so generally maintained by the most distinguished physiologists, is ably discussed by Professor M. The existence of an extravascular circulation in any portion of the animal system he explicitely denies; believing that recent accurate researches refute altogether the hypothesis of the circulation of the blood in canals without membranous parietes.

"The facts, he remarks, that fluids injected into the arteries pass into the veins without extravasation, and that currents cross above and below each other without uniting, have already been deduced. The number of the currents and indeed the smallness of the islets of solid matter between them in the pulmonary membrane of the frog and salamander, also tend to prove that membranous tubes must exist, for these small islets would otherwise be themselves sometimes involved in the currents. But there are also direct means of proving the existence of the membranous tubes around the capillary streams. For this purpose we must select a very delicate parenchyma, which easily softens and dissolves in water, so as to leave behind the net work of capillaries. In a piece of the cortical substance of the kidney of a squirrel which had been laid in water for a short time only, but long enough to have become softened, the capillary vessels which are interlaced around the tubuli uriniferi appeared to me, when I examined them by the microscope, to be independent parts. In the choroid, iris, and ciliary processes, the capillaries are still more evidently substantial independent parts. They can, however, be demonstrated most distinctly in an organ which Treviranus has discovered, I mean the leaf-like organ in the cochlea of the internal ear of birds."

Notwithstanding all these facts, however, and in apparent contradiction to the general position he has assumed, Professor M. admits that, in other parts, the parietes of the capillaries must be regarded merely as surfaces formed of the substance of the organs in a more condensed state, and not as substantial distinct membranes

Through the minute arteries and capillaries, the observations of our author and those of Wedemeyer, show that the blood flows with a constant equable motion. In very young animals its motion, though continuous, is accelerated at intervals corresponding to the pulse in the larger arteries, and a similar motion of the blood is also seen in the capillaries of adult animals when they are feeble: if their exhaustion is so great that the power of the heart is still more diminished, the red particles are observed to have merely the periodic motion, and to remain stationary in the intervals; while, if the debility of the animal is extreme, they even recede somewhat after each impulse. Thus showing that even in the state of the greatest debility, the action of the heart is sufficient to impel the blood through the capillary vessels. The cause of the equable motion of the blood in the capillaries must be sought, according to our author, in the elasticity of the arteries. By the time the blood reaches the minute arteries, the impulse given to it by each contraction of the ventricle is lost in dilating the arteries, while the continuous motion, the result of their elasticity remains.

"During the course of the blood through the vessels, its circulation will necessarily be modified by the unequal obstructions that it meets with in the smaller vessels, causing it to be checked for a time in one vessel while it circulates more quickly through others, but in the capillaries themselves, the pulsatory motion will no longer be perceptible. When an animal, however, is much weakened, and the propulsive power of the heart consequently diminished, the arteries become distended by less blood at each pulsation, and in their turn react with less force upon the blood. The cause, therefore, which, in the natural state, renders continuous the periodic motion of the blood, is not under these circumstances brought into action, and the blood moves forward only at the time of each beat of the heart, the effect of which is then perceptible in the capillaries."

It is impossible for us to notice all the important facts and deductions which the author has presented in relation to the capillary circulation: we must content ourselves with laying before our readers merely the general propositions which he considers to be established by his own observations, in conjunction with those of other physiologists.

The motion of the blood in the capillaries is irrefragably proved to be wholly dependent on the action of the heart. The differences of the blood's motion, in different capillaries, arise from mechanical causes. Thus, sometimes the red particles flow rapidly from one current into a second, as if by attraction. In other cases, the current which they join is very rapid; but they are arrested, as it were, in the collateral current, and only from time to time find means of entering. Sometimes a red particle is even thrown back out of the rapid current into the weaker stream, and is then again repelled. The author has also remarked that the same anastomosing branch between two currents sometimes receives blood in one direction, and sometimes in the other; and that variations of pressure, and position, and motions of the animal, are always the causes of these changes.

"The red particles do not rotate on their axis while passing through the capillaries; in the frog they appear for the most part, to move with the long diameter in the axis of the vessel, but frequently they are placed obliquely, and their position suffers many changes from the mechanical influence of the coats of the vessels; the red particles themselves are quite passive, and never present the slightest sign of spontaneous motion. Several observers have asserted, that, in passing through a narrow portion of the vessel, the red particles are sometimes compressed, and thus elongated. I have never seen this occur; the observation may have been erroneous, and have arisen from the elliptic particle having been presented to the eye in different positions at different times."

All the red particles which are carried into the capillary system by the arteries are, according to our author, returned from it by the small veins; none are apparently retained in the capillaries, at least in an animal which is not enfeebled. The nutrition of the tissue is not, therefore, effected, as some supposed, by the union with them of the red globules.

Denying that the circulation is in any way aided by an attraction existing, as a few physiologists have presumed, between the blood and the capillaries, Professor M., nevertheless, considers that such an

attraction or affinity may be admitted in the case of the turgescence, turgor vitalis or orgasm, which is observed to take place in certain parts of the body, independent of the action of the heart.

"The mutual action or affinity between the blood and the tissues of the body, which is an essential part of the process of nutrition, is, under many circumstances, greatly increased, and an accumulation of blood in the dilated vessels of the organ is the result. It is seen, for example, in the genitals during the state of sexual desire, in the uterus during pregnancy, in the stomach during digestion, and in the processes of the cranial bones, on which the stag's antlers afterwards rest, during the reproduction of these parts."

This condition of local turgescence, which is totally independent of the action of the arteries or capillaries, may be excited very suddenly, as is seen in the instantaneous injection of the cheeks with blood in the act of blushing, and of the whole head under the influence of violent passions; in both of which instances the local phenomena are evidently induced by nervous influence. The active congestion of certain organs, of the brain, for example, while they are in a state of excitement, is a similar phenomenon.

"In inflammation," Professor M. remarks, "the phenomena are so far similar to those of vital turgescence, or orgasm, that the blood is attracted in increased quantity to the part, and escapes from it with difficulty. But the effects of inflammation show that it would be a great error to regard it as identical with increased vital action. In inflammation the function of the part is, in the first place, disturbed by the material change produced in it by the exciting cause of the inflammation; subsequently, nature makes an effort to repair this material change. The appearance of turgescence which arises from the blood being attracted and retained by the inflamed tissues, perhaps for the purpose of restoring them to their natural condition, is gradually exchanged for that of gangrene. The latter state ensues as soon as the material change is so great that the tissues lose the power, which in the healthy state they possess, of preserving the vital properties of the blood, which then itself becomes decomposed in the vessels. Inflammation is produced by irritation of the capillaries, but itself consists neither in an increased nor in a diminished vitality. It is a peculiar state which may occur with the general vital powers in their normal state, or with these powers depressed; and which, in proportion to the degree of its developement, if in an important organ, always exhausts the vital powers, even if they were not previously enfeebled. It is, in fact, a mutual action, morbid in its nature, which is set up between the tissues and the blood, in consequence of the material changes produced in the part, and which is compounded of the original lesion of the part, of a local tendency to decomposition, and of a vital action striving to counterbalance the tendency to decomposition. The vital action of the part sometimes overcomes the morbid tendency, as is exemplified by a healing wound, sometimes it does not."

We shall be unable to follow the author in his examination of the several points connected with the circulation of the blood through the veins. He conceives that the sorbent power of the heart is proved beyond doubt, but though this power may assist, it is not, however, the principal cause of the blood's motion in the veins. The fact, that large veins when divided continue to pour out blood from the portion which is distant from the heart, and connected with capillaries and arteries, proves that the propelling power of the heart extends to the

veins; and Magendie has shown that the stream of blood from the lower end of a divided vein becomes stronger during each expiration; which proves, the author remarks, that the effect of the compression of the arterial trunks, which takes place during expiration, extends to the veins.

In regard to the influence of respiration in promoting the circulation through the veins, Professor M. observes, that the act of inspiration empties the large veins of the thorax; and, in consequence, less resistance is offered to the entrance of the blood from the other veins; but, he adds, this cannot be the principal cause of the motion of the blood in the veins; in reptiles, which breathe by the movements of deglutition, in fishes, and in the fœtus, no movement of inspiration is performed.

"There can be no doubt, therefore, that the same power that moves the blood in the arteries, also effects its motion in the capillaries, and its return to the heart through the veins; and that by the effect of inspiration on the great venous trunks, by the sucking action of the heart, and by the action of the valves, a part only of the resistance which opposes the course of the venous blood is overcome."

Professor M., after presenting a very careful abstract of the numerous experiments that have been undertaken to determine the agency of the blood-vessels in the process of absorption, concludes, that the immediate absorption of matters by the capillary blood-vessels is fully proved, especially by the extraordinary rapid effects of poison; it being equally certain that the general effects of poisoning depend, not on nervous communication, but wholly on the noxious substance entering the circulation. He admits that all the phenomena attributed to absorption by the capillary vessels, might be referred to absorption by the lymphatics; if, as some recent writers suppose, the lymphatics and small veins do really communicate. But this objection, he considers, to be completely set aside by the known laws of the imbibition of animal tissues.

"The primary phenómenon of the immediate absorption of substances in solution into the blood, is the permeation of the animal tissues by the fluids. The property of permeability by fluids possessed by tissues even after death, depends upon their invisible porosity, and is termed imbibition. This kind of absorption being exercised by animal textures wholly devoid of life, may be correctly termed the inorganic, in contradistinction to the lymphatic absorption."

"A gas will permeate a moist bladder, to be absorbed by a fluid within it. This explains how it is that gaseous matters can enter into the blood during respiration, without the globules of the blood escaping. The gaseous matters permeate the membranes of the lungs, and are dissolved in the blood circulating in the numerous capillaries which traverse those membranes, by virtue of the invisible porosity of the coats of the vessels, which, nevertheless, have no openings large enough to admit the red particles of the blood."

The primary cause of imbibition, or the permeability of animal tissues, is the tendency which substances have to diffuse themselves uniformly in the fluid in which they are dissolved; any matter in solution, therefore, which comes in contact with the animal tissues in

their usual moist condition, will tend to diffuse itself in the fluids of the pores, and again, through the medium of these pores, with fluids in contact with the opposite side of the membrane, until the distribution of the matter dissolved is uniform in the two fluids which the membrane separates.

"There are, however," the author remarks, "particular circumstances in which the process of imbibition is accelerated by attraction, and by the action of capillary tubes. The latter is the case when a dry animal texture is moistened, in which case the capillary attraction of the empty pores must favour the entrance of the fluid. The first case is displayed in the phenomena of endosmose and exosmose." "In the direct passage of matters in solution into the capillaries and the blood, endosmose without doubt takes place, and not merely simple imbibition. Dutrochet has demonstrated this by experiment."

"Endosmosis, however," according to Professor M., "does not explain the absorption of all fluids by the animal tissues; a collection of fluid in the pleura, containing albumen and salts, in the same state of concentration as these substances exist in the blood, would not be diminished in quantity by imbibition alone, there would be merely an entire change of the saline matter contained in the external fluid and in the blood, while the bulk of the former would remain the same; and, if the saline ingredients were in a more concentrated state in it than in the blood, its quantity would even become increased. The removal of collections of fluids by absorption must then be effected, in many cases, either by means of the lymphatics, independently of imbibition into the capillaries, or we must suppose that the suction of the venous blood towards the heart, assists the absorption by the capillaries. It is possible that the process of endosmosis may be modified by a peculiar attraction exerted by the tissues on the fluids circulating in them; an attraction, by the agency of which, the fluids in the tissues may be retained while the external fluid is absorbed, so that merely absorption, and not an interchange of fluids, as is the case under ordinary circumstances, is the result. Water, for example, would have a tendency to diffuse itself in the blood of the capillaries, but the blood being under the influence of the mutual vital process which is going on between it and the capillary vessels, would have no tendency to diffuse itself into the water."

Professor M. conceives that by the process of imbibition and endosmosis, many matters dissolved in the animal fluids, particularly foreign substances which have been taken into the circulation, and distributed through the body in their original state, or more or less altered, are afterwards eliminated from the system. But, nevertheless, he denies that exhalation and exudation are, during life, solely under the influence of these physical laws; if such were the case, all the ingredients of the fluids, he remarks, would escape equally, while the matter which permeates the tissues, and is exhaled or exuded, often consists of a part only of the substances which are contained in solution in the blood. Thus in inflammation it is the fibrin which exudes, while in the generality of dropsies it is merely an albuminous fluid. There must, therefore, under ordinary circumstances, be some force in action, he presumes, which prevents the escape of fibrin from the vessels in dropsies, which in inflammation is rendered inert,—some affinity or attraction which the parenchyma possesses for the fibrin, but not for the albuminous serum, which, therefore, in dropsy is allowed to escape.

"At the commencement of inflammation, as observed in a wound, or after the application of a blister, serum merely is effused; when the inflammation be-

comes more violent, the fibrinous part of the blood also exudes. It is most probable that there are similar differences in the exhalation of fluids in the gaseous form, for instance, from the skin; and that not every part of the fluids of the body which is capable of assuming the form of vapour, is really exhaled from the surface of the membranes."

The Professor likewise remarks that secretion, or the elimination from the blood of various substances, cannot be explained according to the laws of endosmosis.

The account of the lymph and lymphatic vessels which constitutes the subject of the third section of the first book, presents many interesting points which we should be pleased to notice would our limits admit—we shall be under the necessity, however, of confining our attention solely to a few of the more important particulars embraced in this section of the work.

In regard to the globules of the chyle, Professor M. found them to be in general much smaller than the red globules of the blood; in some instances, however, as in the cat, they were of similar size, and in the rabbit some of these globules were even larger than the red particles of the blood. Professor M. has convinced himself that they are not, as some suppose, finely divided portions of fatty matter. There is no evidence, he remarks, to show that the globules of the chyle are developed in the lacteals. The absorption of milk, and consequently of globules into the blood, is rendered in some measure probable by a circumstance noticed by Schlemm. He has observed that, for a certain time after sucking, the blood of kittens is sometimes, but not always, of a yellowish red colour, and separates, when it coagulates, into a red clot and a milk white serum. Rudolphi and the author have verified this observation, and it has also been confirmed by Mayer.

The author's description of the mode of origin and structure of the lymphatic vessels is particularly interesting, we have to regret our inability to present even a brief outline of it to our readers. He seems to infer from all the facts as yet collected, that the lacteals do not commence by open mouths from the mucous coat of the intestines.

"It still," he remarks, "remains an undecided question whether the globules of the chyle enter the lacteals already formed. The varying opacity of the chyle, according to the difference of the food taken, is the chief argument in favour of their being taken up from the cavity of the intestine, and not afterwards formed in the lacteals. But where are the openings by which they enter these vessels?—for they must require larger pores than those by which all soft tissues, and even the walls of the capillaries are rendered permeable to water and matters in solution, but which are too minute to allow the escape of the red particles of the blood from the capillaries. All good observers agree that there are no visible openings in the villi of the intestines; and I have myself repeatedly examined the villi of the intestines of the calf, ox, rabbit, hog and cat, without having even perceived any perforation in their extremity. No opening certainly exists at that part of the villi."

Professor M. denies that there is any evidence of the supposed open communications between the lymphatics at their origin and the secreting canals of the glands. The connection of the lymphatics and arteries, of which Magendie speaks so cursorily, is not, he considers,

better proved; neither is the connection of the lymphatics with the small veins, which some physiologists describe, better established. Communications of lymphatics however, with the large veins in the thigh and pelvis of birds and the ischiadic vein in the frog are evident to the naked eye.

The most important fact adduced by Professor M. in relation to the lymphatic circulation, is his discovery of small pulsating sacs connected with the lymphatic cavaties in frogs; which sacs, he conceives, must be regarded in some respects as hearts to the lymphatic system. He has found two pair of them in frogs; one situated just under the skin, in the ischiadic region, the other more deeply over the third cervical vertebra. The pulsations of these sacs are quite independent of those of the heart, and continue after the heart is removed from the animal, even after the body of the animal is cut in pieces,—the pulsations of the cervical pair are not always synchronous with those in the ischiadic region, and even the corresponding sacs of opposite sides are not always synchronous in their action. They contract about sixty times in a minute. They contain colourless lymph; and the lymphatic vessels and lymph spaces of the extremities can be inflated from them.

"The inferior lymphatic heart on each side pumps the lymph into a branch of the ischiadic vein. By the superior, the lymph is forced into a branch of the jugular vein, which becomes turgid each time that the sac contracts." "Similar pulsating organs seem to exist in all reptiles. I have hitherto discovered the superior pair only in frogs and toads. The inferior pair I have found in the salamander and lizard; in these animals they are situated at the sides of the root of the tail behind the ilium, and are more difficult to find than in the frog, where they lie immediately under the skin. Panizza has discovered the inferior pair of these lymphatic hearts also in serpents."

Professor E. H. Weber has given a very accurate description of the lymphatic hearts in a large species of serpent, the python bivitatus. Each heart is about nine lines in length and four in breadth, has an external cellular coat, and a thick muscular coat; four muscular columns running across its cavity, which communicates with three lymphatics, and with two veins. All the orifices are provided with valves formed by duplicatures of the smooth membrane that lines the cavity of the heart. The heart lies in a kind of thorax formed by the last rib, and by the transverse processes of the last lumbar and first sacral vertebra. The motions of the tail produce dilatation and contraction of this thorax, which motions, Professor W. believes, aid the heart in pumping the lymph into the vein which conveys the blood to the kidney. Each heart has, at its inner border, a small appendage or auricle, the cavity of which is in no way separated from the rest of the organ.*

Professor M. infers from his observations that the fluid contained in the lymphatics is formed principally of the fluid parts of the blood, and is not an entirely new fluid. He has found that when the blood of the frog does not coagulate, the same is the case with the lymph.

* For a further account of the lymphatic hearts, see the interesting paper of Dr. Alison in the present number of this Journal.

He denies that there is any evidence that the lymphatics are capable of absorbing purulent matter.

"The entrance of the globules of pus into the lymphatics presupposes," he remarks, "the existence of apertures of corresponding size in these vessels. In the parenchyma of organs where there is no free surface, no such apertures can exist. The fluid part of the pus may be easily absorbed into the lymphatics, but the presence of the globules of the pus in these vessels appears to me to be quite independent of absorption. I should regard them rather as the product of inflammation of the lymphatics themselves, or suppose that they have entered mechanically in consequence of solution of continuity of the lymphatics involved in the disease."

The same remarks are repeated by him in reference to the presence of pus in the blood.

In regard to the power by which the lacteals and lymphatics effect absorption, the author admits our entire ignorance. He observes that it is easy to perceive that the phenomena of endosmosis in dead animal membranes are by no means sufficient to account for the organic process of absorption in the animal and vegetable kingdoms.

"If absorption is to be explained in a manner analogous to the laws of endosmose, it must be supposed that a chemical affinity, resulting from the vital process itself, is exerted between the chyme in the intestines and the chyle in the lacteals, by which the chyle is enabled to attract the chyme without being itself attracted by it. But such an affinity or attraction would be of a vital nature, since it does not exist after death. To account for absorption, some might suppose that fluids are attracted by the external surface of the lymphatics, and repelled towards the cavity of the vessels by their internal surface; there are no facts either to confirm or to refute this hypothesis."

"It is probable that there is no mechanical apparatus for absorption in the radicles of the absorbent system, since in plants no such apparatus exists. Absorption seems to depend on an attraction, the nature of which is at present unknown, but of which the very counterpart, as it were, takes place in secretion; the fluids altered by the secreting action being repelled towards the free side only of the secreting membranes, and then pressed onwards by the successive portions of fluid secreted. In many organs,—for instance, in those invested with the mucous membranes—absorption by the lymphatics and secretion by secreting organs are going on at the same time on the same surface."

Professor M. directs especial attention to the fact, too often overlooked, that the absorbent vessels effect in the chyle and lymph a change of composition—the same action is also produced by the absorbent glands. The lacteals and their glands appear to convert, by the agency of their parietes, a part of the albumen of the chyle into fibrin.

While the author admits that the pressure exerted by the muscles upon the lymphatics, and the suction exerted by the heart on the venous blood during the dilatation of its cavities may aid in propelling onward the lymph and chyle, he nevertheless considers the motion of the lymph and chyle to depend most probably principally on the continued absorption going on in the radicle net-work of the lymphatics, in the same way as the ascent of the sap in plants, during the spring, depends solely on the constant absorbing action of the roots.

The second book in the arrangement of the work of Professor M. is devoted, as was previously stated, to an examination of the chemical

changes produced in the organic fluids and organized textures under the influence of the vital laws. Notwithstanding the importance of all the subjects comprised under this head, we shall be under the necessity of presenting only a very cursory notice of them. According to our author

"The material changes which occur in the organic system may be divided into the purely chemical and the organic chemical.

"1. Purely chemical changes, regulated by the laws of elective affinity, ensue in the animal system when the vital principle looses its influence on the textures of the body, or becomes incapable of counterbalancing the power of chemical affinity.

"2. In other cases, certain substances, particularly those generated by the decomposition of the organic matter in diseased animals, act on other living animals in a manner which resembles the chemical process of fermentation. Thus, contagions give rise to the production of similar changes of composition in the animal matters of other living beings.

"3. Chemical compounds and simple elementary substances may, however, by affording the components which were deficient for the formation of new organic compounds in the body, favour the production of these compounds instead of decomposing them, and thus assist the operations of the vital principle. Thus, the admixture of a certain proportion of mineral substances in the food is necessary. The change effected in the blood during respiration is an organic chemical change, in which a binary compound is formed and separated from the blood.

"4. Organic substances again may reciprocally decompose each other even without the influence of the vital principle. Thus saliva, according to Leuchs, converts boiled starch into sugar, and Tiedemann and Gmelin have shown that starch is changed in the stomach of animals into gum of starch and sugar. Certain organic fluids, such as saliva, gastric juice, bile and pancreatic juice, serve to affect similar chemical changes in the animal economy. It is true that both the substances which act on each other in this way are quaternary compounds, and the products may still be quaternary compounds without being reduced to binary combination. But organic substances once formed, even when subjected to the action of inorganic compounds out of the body, frequently undergo merely a change of organic combination. In the animal system, however, the action of organic fluids on one another is modified by the vital principle. The action of saliva and of bile, in the process of digestion, is not intelligible from the effects which they produce on organic compounds out of the body.

"5. The organic assimilation is, in the first place, evidenced in the changes of composition which organic fluids undergo while exposed to the influence of living surfaces endowed with the vital principle. Thus the composition of the chyle absorbed from the alimentary canal undergoes a change in the lacteal system; the quantity of fibrin that it contains being greater in proportion to the number of mesenteric glands through which it has passed. In the formation of the different secretions the same action of the tissues on the fluids exists, but in a modified form, inasmuch as the components of the blood, which have been changed by the action of the tissues, are in this case separated from it.

"6. Lastly, assimilation is still more remarkably manifested in the conversion of the organic fluids into formative particles of the organs in the process of nutrition. The blood in the capillaries comes in contact with the smaller particles of nerves, muscles, mucous membranes, glands, &c., and each tissue exerts its assimilating action on the substances contained in the blood, changing their elementary composition, nourishing itself by their appropriation, and at the same time imparting to them the property of organizing other matters in their turn."

In the first section of the present book the subject of respiration is treated of. After a consideration of the composition of the atmosphere and of respirable and irrespirable gases, a very clear and instructive account is given of the respiratory apparatus, in the different orders of inferior animals, as illustrative of the structure and functions of the same apparatus in man. We shall be able to present only the general conclusions to which Professor M. has arrived from an examination of all the facts in our possession in regard to the changes induced in the blood by the process of respiration, from which the reader will readily acquire a knowledge of the author's views in relation to this important subject.

The facts relative to the changes effected in the blood during its passage through the lungs, that have been ascertained by experiment, may be stated in general terms as follows.

The colour of venous blood is not rendered perceptibly brighter by exposure to the vacuum of the air-pump. The same is true also of blood artificially impregnated with carbonic acid. Blood impregnated artificially with carbonic acid, and thus darkened, recovers, however, its natural colour in some degree when exposed to the air; and even when it has been rendered by impregnation with carbonic acid of quite a dark violet colour, it acquires a bright red colour when agitated with oxygen; and the oxygen in which blood thus circumstanced has been agitated, is afterwards found to contain carbonic acid mixed with it. Carbonic acid is evolved likewise when fresh blood is agitated with atmospheric air. No carbonic acid can, however, be obtained from venous blood by the agency of heat.

Carbonic acid is set free when venous blood is submitted to the vacuum of the air-pump, or when hydrogen or nitrogen are passed through it. A certain quantity of gas can be extracted from arterial blood likewise by means of the air-pump, although none that can be detected is given out under the influence of heat.

Both kinds of blood contain carbonic acid gas, nitrogen and oxygen, but in different proportions; the venous blood contains the most carbonic acid, the arterial blood the most oxygen; the proportion of nitrogen in the two is not always different.

No carbonic acid is evolved during the change of the colour of venous to that of arterial blood, which is produced by the admixture of neutral salts.

The red coagulum of blood, when placed in distilled water, assumes a darker, in fact a blackish colour.

From the foregoing general facts, Professor M. deduces the following as the true explanation of the respiratory process.

"During respiration carbonic acid is extracted from the blood by the atmospheric air, oxygen being yielded to the blood in its place; a portion of the carbonic acid still remains, however, dissolved in the arterial blood. In the process which is constantly going on between the blood and the texture of the organs in the capillary vessels of the body, the oxygen, which is a vivifying stimulus for the organized substance, disappears in part from the arterial blood, and carbonic acid is formed; the venous blood, therefore, contains a large proportion of carbonic acid, but it retains some of the oxygen. The venous blood

reaching the lungs is again deprived of a part of its carbonic acid by the action of the atmospheric air. The interchange of the carbonic acid and oxygen in the lungs is wholly in accordance with the physical laws of the absorption of gases. A fluid impregnated with a particular gas does not give it out as long as its surface is subjected to the pressure of the same gas; but if it is brought into contact with a different gas, an interchange takes place until the gas with which the fluid is impregnated, and the gaseous atmosphere which presses upon it, are equally mixed. This law affords a ready explanation for the exhalation of carbonic acid by frogs in hydrogen and nitrogen, in as large quantity as in atmospheric air, as well as for the fact that hydrogen and nitrogen transmitted through blood becomes impregnated with the carbonic acid which it contains."

With the foregoing imperfect notice of the author's very able section upon the function of respiration, in which will be found an abstract of all the well authenticated facts known in relation to it, we must take our leave of the subject, and pass on to the next section which treats of the nutrition, growth and reproduction of the different organs.

The theory, that nutrition is effected by the direct union of the red particles of the blood or of their nuclei, with the tissues, is, as we have already intimated, in the opinion of the author, decidedly erroneous. After deducing the arguments upon which this opinion is founded, derived chiefly from the greater minuteness, compared with the red globules, of the muscular and nervous fibrils and the elementary particles of which the tissues of the body are composed, Professor M. remarks, that nutrition must be effected by the fluid parts of the blood permeating the parietes of the capillaries, while the solid particles are visibly carried onwards into the veins. The most important materials for nutrition are the albumen and fibrin dissolved in the liquor sanguinis. The portion of these matters which permeate the parietes of the capillaries is partly imbibed by the tissues, while the residue, beyond what is necessary to their nutrition, is taken up by the absorbent vessels, and carried again into the blood.

"It is not known," the author remarks, "whether the parts which appear to contain colouring matter, as for instance, the muscles, derive it from the blood—a part of the colouring envelope of the red particles having been dissolved—or whether this matter, which becomes still more highly coloured by the action of the atmosphere, is formed in the muscles themselves. But, however this may be, the red particles themselves do not unite in substance with the tissues. They certainly perform some very important office in the animal economy. A reciprocal action takes place between them and the component particles of the organs, but they move on in a continuous current, exerting their influence on the tissues in their transit through them, without being arrested by them."

"The proximate elements of the tissues exist, in part, ready formed in the blood. The albumen which enters into the composition of the brain and glands, and of many other structures in a more or less modified state, is contained in the blood. The fibrin of the muscles and musular structures is the coagulable matter dissolved in the lymph and blood; the fatty matter which contains no azote, exists in the free state in the chyle; the azotised and phosphoretted fatty matter of the brain and nerves exists in the blood, combined with the fibrin, albumen and cruorin. The iron of the hair, pigmentum nigrum, and crystalline lens, is also contained in the blood. The silica and manganese of the hair, and the flour calcium of the bones and teeth, have not hitherto been detected in the blood, probably from their existing in it in but small proportion. The matters here

enumerated are attracted from the blood by the particles of the organs analogous to themselves, partly in the state in which they afterwards exist in the organs. In other instances their ultimate elements are newly combined in them, so as to form new proximate principles; for the opinion that all the component elements of the organs exist previously in the blood in their perfect state, cannot possibly be adopted; the components of most tissues in fact present, besides many modifications of fibrin, albumen, fat and osmazome, other perfectly peculiar matters, such as the gelatine of the bones, tendons and cartilages; nothing analogous to which is contained in the blood. The substance of the vascular tissue, the different glandular substances also, cannot be referred to any of the simple components of the blood. Even the fibrin of the muscle cannot be considered as exactly identical with the fibrin of the liquor sanguinis. Assimilation, then, does not consist merely in the component particles of the organs attracting the fibrin, albumen, and other matters of the blood which flow through them, adding to themselves the matters similar to their proximate principles, and changing the composition of those which are dissimilar: besides these actions, the assimilating particles infuse into those newly assimilated, their own vital properties."

After considering the constant change which occurs in the material of the body, the absorption of the old and deposit from the blood of the new material, we are presented with an account of the chemical composition of each of the organized tissues, agreeably to the latest and most accurate analysis.

The chapters on the growth and reproduction of the different portions of the body, though replete with interesting and instructive matter, and some very ingenious and plausible explanations, uttered as mere hypotheses, of vital processes that are as yet involved in obscurity, we must nevertheless pass by without attempting even a brief notice of it.

The succeeding section on secretion contains a few important points to which, notwithstanding the length to which the present article has been already extended, we must be permitted to direct the attention of our readers.

The apparatus by which the animal secretions are produced, are, according to Professor M., either cells, such as those of the adipose tissue; plane membranes, such as the synovial and serous membranes; or organs of peculiar complex structure, as the glands.

The author's description of the cellular tissue, the serous and mucous membranes and the skin, which are introduced into this section, though brief, are very clear and satisfactory. His examination into the structure of the secretory glands presents us with a very novel view of the organization of these bodies.

However various the form of their elementary parts, all secreting glands, without exception, throughout the animal kingdom, according to Professor M., follow the same law of conformation, and constitute an uninterrupted series from the simplest follicle to the most complex gland. No line of demarcation, he asserts, can be drawn between the secreting organs of invertebrate and those of vertebrate animals. Not merely do we meet with the simplest sacs and tubular secreting organs, like those of insects, in the higher animals, but there is a gradual transition from these simple secreting organs of insects to the glands of the most perfect vertebrata.

All glands agree in affording by their interior a large surface for secretion. The varieties of internal surface by which this great end—extent of surface in a small space—is attained, are very numerous. The correctness, therefore, of Malpighi's theory of the structure of glands has been placed beyond doubt by recent researches. Malpighi was, however, mistaken as to what constitutes the true glandular elements: the parts in the compound glands which he called follicles, are not, according to our author, really the elementary parts, but are themselves formed of much more minute elements, agglomerated together around the branches of the efferent ducts. Moreover, the blind extremities of the secreting tubes are not always follicles, they may be long cæca, or ramifying cæcal cells, in other instances large convoluted tubes which preserve their diameter throughout, and anastomose frequently with each other. The main point in Malpighi's doctrine, that all the terminal branches of the ducts have closed extremities, is, however, correct.

Acini, in the hypothetical sense in which the term has been used by writers, as secreting granules, do not exist. The parts described as acini are merely masses formed by the agglomeration of the extremities of the secreting canals; frequently, indeed, they are formed of minute vesicles aggregated together in grape-like bunches, which may be injected with mercury, and are often susceptible of inflation. In many glands which have been incorrectly described to have acini, or secreting granules, there are not even these hollow vesicular acini.

"It has been demonstrated, in the case of all glands, that the blood-vessels are not continuous with the secreting tubes—that the minute vessels bear the same relation to the coats of the hollow secreting canals, and their closed extremities, as to any other delicate secreting membrane, such as, for example, the mucous membrane of the pulmonary air cells. They do not open by free mouths into the radicle extremities of the secreting canals and cavities of the glands. The arteries terminate by numerous anastomoses with the veins, forming a net-work which is distributed over the surface of the elementary parts of the gland. Thus, the blood-vessels, like the secreting canals, constitute an independent closed system of vessels. The arteries and veins, after ramifying in an arborescent manner, being connected together by a net-work of closed tubes."

There is no communication existing in glands between the ducts and lymphatics.

"The arborescent ramifications of the blood-vessels accompanying the ducts in their developement, and the reticulated capillaries in which the blood-vessels terminate are extended over all the closed elementary parts of the gland, and supply them with blood."

"The capillary blood-vessels are, for the most part, much more minute than the smallest branches of the ducts or secreting canals, and their cæcal extremities, even in the most complex glandular organs. The elementary parts of the gland, though minute, are of such a size that the capillary blood-vessels form around them a net-work which invests them."

"The mode in which the extent of the internal secreting surface of a gland is realized is very various; and no one kind of conformation is peculiar to any one gland. Perfectly different glands may have a similar elementary structure, and similar glands have often a perfectly different structure in different animals. The kidneys alone maintain one constant character in all classes of animals;

namely, that of consisting of long tubes, which do not ramify, but run either parallel to each other or interwoven, although the arrangement of these tubes is subject to the greatest variation."

"However different the secretions of the glands may be, the substance of their elementary parts is in all instances white, or of a greyish or yellowish-white colour. There is no essential correspondence between the substance of the gland and the matter which it secretes."

According to Professor M. all secretions are formed on free surfaces, whether these be afforded by simple membranes, as the serous and mucous membranes, or by the more complex internal surface of the cellular or tubular cavities of glands. In the secreting membranes the blood is transmitted from the arteries to the veins, through an infinite number of anastomosing vessels which form an extended net-work. The membrane is permeated by the liquid portion of the circulating fluid, effects in it some change, and pours out the matter thus charged as a secretion on its surface. In the same manner the elementary parts of all glands are in their whole course surrounded by a net work of capillaries, and are separated from each other merely by delicate cellular tissues, which connects them together, and contains in its substance the minute currents of blood. The walls of the elementary tubes or cells, &c., are in every part overrun with capillary streams of blood, and are permeated by the fluid portion of it, upon which they impress some peculiar change, and pour out the fluid in its altered state on their inner surface, to be carried out by the efferent ducts. This, Professor M. remarks, is the simple process of secretion, which differs from nutrition merely in the circumstance that the part of the blood which has undergone the peculiar change is eliminated on a free surface instead of being added to the substance of the organ.

Professor M. believes that the most probable explanation of the nature of the secreting process is, that by virtue of imbibition, or the general inorganic porosity, the fluid portion of the blood becomes diffused through the tissue of the secreting organ. That the external surface of the glandular canals exerts a chemical attraction on the elements of the fluid, infusing into them at the same time a tendency to unite into new combinations, and then repels them, in a manner which is certainly quite inexplicable, towards the inner surface of the secreting membrane or glandular canals. This hypothesis, he adds, although quite unsupported by facts, is not without its analogy in physical phenomena, and it would appear probable that in a somewhat similar manner is to be explained the process of absorption.

The peculiarity of secretions does not depend on the internal conformation of the glands, very different fluids being secreted by glands of similar organization. The nature of the secretion must therefore be referred solely to the peculiar vital properties of the organic substance which forms the secreting canals, and which may remain the same, however different the conformation of the secreting cavities may be, while it may vary extremely, although the form of the canals or ducts remains the same. The variety of secretions depending upon the same cause as variety of the formation and life of organs gene-

rally; the only difference being, that in nutrition, the part of the blood which has undergone the peculiar change is incorporated with the organ itself, while in secretion it is eliminated from it.

The fourth section of book second is devoted to an examination of the all important processes of digestion, chylification, and the excretion of the decomposed effete matters.

Upon the subject of digestion, the author has collected all the more recent and well established facts; he has not, however, in our opinion, drawn from them those general conclusions which they fully warrant. We cannot notice, even briefly, the pertinent remarks of Professor M. on the questions relating to food, on diet, nor the very admirable account he has presented of the structure of the digestive organs in man and other animals.

The views expressed by the author of the nature and properties of the gastric juice are, in general, correct, being based upon experiments of the most conclusive character. He appears to us, however, to lean too much to the doctrine which ascribes to the gastric juice a *specific* solvent property. Eberle, in his *Physiologie der Verdauung*, has shown that while neither dilute acids nor mucus alone possess the property of dissolving rapidly organic substances, yet mucus mixed with acids has this solvent power; and that albumen or meat digested with acidulated mucus, or with an infusion of mucous membrane in dilute acid, are not only quickly dissolved, but also undergo a chemical change. The experiments of Eberle have been repeated by Schwann as well as by the author, and numerous other physiologists, who have found them in the main to be quite correct; excepting that, according to Schwann, it is the gastric mucus alone, when acidulated, that exhibits solvent properties; others, however, have shown that the mucus of the whole of the alimentary canal when acid exhibits a solvent action. Schwann has proved that the acids of the digestive fluid of the stomach are essential to digestion; for when the digestive fluid was neutralized with carbonate of potash it became inert, but recovered its power on the addition of the proper quantity of muriatic acid. From the foregoing facts Professor M. infers that the solution of some of the alimentary substances is effected not by the digestive principle which he has named *pepsin*, but by the acids, either principally, or with the aid of another organic matter. The existence of the peculiar digestive principle, *pepsin*, is, in our opinion, however, very hypothetical.

Professor M. would seem to consider the office of the saliva to be merely that of softening the alimentary bodies so as to facilitate deglutition; many facts, however, prove that in all probability it acts a very important part in the process of digestion. The author notices the fact observed by Leuchs and confirmed by Schwann, namely, that saliva has the property of changing starch into sugar, which is the change that starch gradually undergoes when introduced into the stomach.

In the section which treats of the influence of the biliary secretion on the chyme, the author has been able to present nothing of a satis-

factory nature. He does not consider it probable, that the sole office of the bile, in addition to the elimination of the resin and colouring matter, which are excrementitious, is to neutralize the acid of the chyme. Those of its essential components which do not form part of the excrement, either contribute, he supposes, to complete the solution of the chyme, which was Haller's opinion; or they may serve to effect the conversion of the chyme into chyle,—that is to say, the production of albumen from the food, as Prout supposes. The bile seems also to be a necessary stimulus for the peristaltic motions of the intestines.

From the chapter on chylification we can only afford room for the following extracts, presenting a comparison of the chyle with the lymph and with the blood.

"Both chyle and lymph contain globules; but those of the transparent lymph are very few in number, while those of the chyle are so numerous as to give it a milky appearance. They both contain fibrin, which likewise, however, seems to be contained in smaller quantity in the lymph; for Tiedemann and Gmelin found that 100 parts of the chyle of the lacteals, which had traversed the mesenteric glands in a horse, previously fed with oats, yielded 0.37 of dry coagulum; while the same quantity of lymph from the pelvis afforded only 0.13. This great apparent difference may, however, be owing to a portion of the numerous globules of the chyle being included with the fibrin in the coagulum. The fatty matter, which is not perceived in the lymph, but is contained in so large quantity in the chyle, giving rise to a cream-like pellicle which forms on its surface, constitutes another point of difference. The saline matters appear to be about the same in both.

"The chyle, as it is obtained from the thoracic duct, differs from the blood:—

"1. In its globules being insoluble in water, while the red particles of the blood, with the exception of their nucleus, are readily soluble in that fluid.

"2. In its wanting the red colouring matter: (this difference is not constant.)

"3. In the form and size of its globules.

"4. Its alkalinity, which was noticed by Emmert, Vauquelin, and Brande, is, according to Tiedemann and Gmelin, less marked than that of the blood, and is sometimes absent.

"5. The proportion of solid ingredients is less in the chyle than in the blood. One thousand parts of chyle contain, according to Vauquelin, only from 50 to 90 parts of solid matter; while Prevost and Dumas state that 1,000 parts of blood contain 216; and Lecanu, 185 parts of solid ingredients.

"6. In 1,000 parts of serum of the blood there are, according to Reuss and Emmert, 225; in 1,000 parts of serum of chyle only 50 parts of solid matter. From the serum of the chyle of sheep, dogs, and horses, Tiedemann and Gmelin obtained from 2.4 to 8.7 per cent. of solid matter; while Prevost and Dumas state the amount of solid ingredients in the serum of the blood of these animals to be from 7.4 to 9.9 per cent.

"7. The proportion of fibrin is much less in the chyle. Tiedemann and Gmelin obtained from the chyle of the animals just named, only from 0.17 to 1.75 per cent. of dry fibrin; and, according to Reuss and Emmert, 1,000 parts of blood of the horse contain 75 parts of (moist?) fibrin, while 1,000 parts of chyle contain only 10 parts.

"8. The fibrin of chyle appears to differ somewhat from that of the blood; for Brande has observed that acetic acid dissolves but a small part of the chylous coagulum, which in this resembles albumen, while fibrin of the blood is generally readily soluble in the acid.

"9. Chyle contains a large quantity of fat in a free state; the fat of the blood is wholly in a state of combination with other matters; the coagulum of chyle likewise contains fat in a combined state.

"10. The chyle, like the blood, contains iron, which it derives from the food, and conveys into the blood; but the metal appears to be in a much less intimate state of combination in the chyle than in the blood; for it can be extracted from it by means of nitric acid, and then forms a black precipitate with tincture of galls, a blue with prussiate of potash. Even the serum of chyle afforded evidence of containing iron when it had been freed from its albumen. Emmert, however, imagines that the iron contained in the alimentary matters in the small intestine is more lightly oxydized than in the chyle, since the fluid of the small intestine of the horse is acid, and since the fluid from a horse's intestine, which was filled with digested aliment, after being filtered, afforded, immediately that the admixture was made, a black precipitate with tincture of gall, and a blue one with prussiate of potash; while in chyle the change of colour in each case took place very slowly."

The next chapter treats of the function of the spleen, supra-renal capsules, and the thyroid and thymus glands.

The function of the spleen probably consists, according to the author, in the production of some change, of which the nature is unknown, in the blood which circulates through its tissue, and in thus contributing to the process of sanguification; or in the secretion of a lymph of a peculiar nature, which, being mixed with the contents of the lymphatic and lacteal system coming from other parts, tends to perfect the formation of the chyle. There are no other ways than the lymphatics and veins by which any animal matter, modified by the action of the spleen, can be conveyed away from it.

The closing chapter of the second book, and of the two parts of the Elements of Physiology under review, treats of cutaneous exhalation and perspiration, and of the secretion of urine; we cannot spare sufficient space, however, to notice any of the interesting facts and deductions of the author in relation to these important functions, but must here close our analysis; which, imperfect and superficial as it is, has already been extended beyond the limits usually allotted to reviews of works professedly elementary. The work of Professor Müller, possesses, however, a character far above the ordinary run of elementary treatises upon physiology. It displays, on the part of the author, a perfect acquaintance with his subject; very extensive research, and no little discrimination and judgment in selecting from amid the immense mass of materials within his reach, such only as are calculated to convey to his readers correct views of the animal functions. We strongly recommend to such as wish to become fully acquainted with the present state of physiological knowledge, this work of the learned professor of Berlin.

D. F. C.

BIBLIOGRAPHICAL NOTICES.

Art. XII. *A Popular Treatise on Medical Philosophy, or an Exposition of Quackery and Imposture in Medicine.* By Caleb Ticknor, M. D. New York. Gould & Newman. 12mo., pp. 273.

Dr. Ticknor is already known to the public as the author of a popular treatise on diet, regimen, &c. published under the title of the Philosophy of Living. The object of his present essay seems to be two-fold; to convey to the general reader correct elementary knowledge of the principles of physiology, of the nature of the leading forms of disease, and of their appropriate treatment; and, 2ndly, to expose the falsehood and absurdity of the pretensions advanced by nostrum venders, bone-setters, cancer doctors, steam doctors, et id genus omne. As a physiological treatise, even for popular use, it is necessarily, from the brief space allowed for the developement of the subject, exceedingly imperfect. The same remark is applicable to the pathology and therapeutics, in which department, moreover, is betrayed rather an over anxiety to display an acquaintance with recent doctrines and discoveries, to the neglect of long established facts and principles. The portion of the volume devoted to quackery is open to no objection, and deserves much praise. It is a well sustained and pungent satire, uttered without fear or favour, seldom tinged by coarseness or exaggeration, and seasoned with a racy humour, which adapts itself well to the subject, and to the class of readers for whom it is mainly designed. The faults, if there be any, lean to the side of candour and liberality. In his desire to avoid harshness or injustice, he perhaps concedes more than is required; but enough remains to produce complete conviction, whenever it meets a mind still accessible to reason. As to any permanent influence to be produced on the people by appeals like these to their judgment and good sense, we shall have occasion presently to express our opinion; but it is due to Dr. Ticknor at the outset to say, that he has employed with good effect the means and materials so abundantly within his reach, for the display, in its true light, of that wide-spread system of unblushing imposition, which now pervades this country, feeding like a vulture on the bowels of the community, draining their pockets and poisoning their bodies. "One," says Dr. T. "who is not well acquainted with this subject, would be incredulous in regard to the extent and prevalence of quackery in this enlightened age. He would hardly believe that every country village, if it has not one empiric at least, has nevertheless a place for selling all kinds of nostrums and specifics for all kinds of diseases; and he would be still less likely to believe a true statement of the amount of money received by some of the proprietors of patent medicines."

We propose now to present a succinct account of that portion of our author's volume which relates to the subject abovementioned, omitting all reference to the other portions, except in one or two instances, in which, true to our vocation as critics, we may feel called upon to utter some comment.

Among the forms which quackery has assumed in this country, no one, perhaps, has produced more widely devastating effects than that known under the name of the steaming or Thompsonian treatment. It consists essentially in surrounding the body of the patient with some non-conducting substance, as flannel, and exposing it to the vapour produced by boiling water or some aromatic infusion. At the same time, cayenne pepper and lobelia are freely ad-

ministered, and the profuse perspiration, thus produced, is maintained without intermission for several hours. Dr. Ticknor imagines that, in this process, the inflammation excited by the pepper is counteracted in a greater or less degree by the lobelia and the steam; and that the article becomes less dangerous in this way than when given alone. We should rather suppose that any local effect which might otherwise be produced upon the stomach by the capsicum was merged in its influence as a general stimulant; that it served to excite the circulation, while by the action of the vapour the blood was constantly determined to the surface. The action of the lobelia, which would probably otherwise be manifested in the production of nausea, and thereby in withdrawing the circulation from the surface, is also modified by the external stimulus; its secondary is substituted for its primary operation, and it becomes an adjuvant to the general result. According to this view, the danger as well as the benefit of this mode of treatment depends on its action as a sudatory, as determining the fluids powerfully to the skin, and draining off the watery portion of the blood in great quantity by cutaneous exhalation. Where death has occurred, this result may have been due, in some cases, to gastric inflammation, to cerebral congestion, or the shock occasioned to the nervous system; and sometimes, perhaps, it is to be ascribed to the exhaustion incident to so enormous a depletion, and is to be regarded much in the same light as death from hemorrhage, or collapse from Asiatic cholera. The perspiration, as our author remarks, like the other fluid evacuations from the body, is derived from the blood; so that the vapour bath acts as a direct depletive and debilitant, reducing the quantity of that fluid, on which the system depends for nutriment and strength. The utter folly and criminality, however, of persevering in the employment of such means, till the powers of the frame are entirely exhausted and reaction becomes impossible, are rendered, in this view of the subject, but the more obvious. According to the technicalities of the law, the "doctor" may in such cases be acquitted of murder; but at the bar of eternal justice we see not how he can escape the responsibility of the death of his victim.

The author displays very clearly the fallacy of the common impression concerning debility, that it is only to be counteracted by tonics and stimulants. Nothing more certainly induces debility, nothing more effectually prostrates the strength, than fever and inflammation. An individual, suffering from pleurisy or inflammation of the lungs, may be so completely overcome by the violence of the disease, as to be unable to raise himself from his bed or to turn in it. The access of an intermittent produces complete prostration of the vital power. The oppressed heart is scarcely able to send the blood into the extremities, the muscles refuse to obey the will, the voice changes from its natural deep full tone to a feeble treble, and the sufferer whines out his wants "like a sick girl;" yet, in all these cases, the debility is a deceptive symptom, and if regarded by itself, without reference to the causes which produce and maintain it, would lead to the most erroneous and fatal practice. In such a state of things, timely depletion, as by abstracting a certain amount of blood, in place of increasing the debility, will often at once relieve it; the local congestion removed, the heart acts with freedom, the oppressed pulse assumes its natural character, pain disappears, and strength returns. There are no practitioners of any experience, and few unprofessional persons, who have not seen bleeding under such circumstances act like a charm. Hence the absurdity, as observed by Dr. T., of regarding debility as a distinct and simple affection, requiring under all circumstances the same treatment, and always forbidding depletion. This prejudice, which exists extensively among the ignorant, is one of the most embarrassing to the practitioner. When, after the most careful examination of a case, he has decided that such or such an evacuant is indicated, he is met by the apprehension on the part of friends that the child is too weak to bear medicine, or bleeding or leeches, and he realizes fully, from the manner in which this sug-

gestion is made, that should any untoward accident occur after the depletion has been employed, the remedy, and not the disease, will be made chargeable with the event. In such a crisis, it requires no small firmness for a practitioner to act up to his own sense of duty, and neither allow himself to be intimidated by opposition, nor deterred from the plain path of duty by a vague dread of consequences.

The class of nostrums sold as tonics, gout cordials, wine bitters, &c., are probably less popular now than formerly. There is less of mystery in regard to their composition, most of them being known to owe to alcohol the greater part of their virtues; and the efforts of the friends of temperance, while engaged in putting a stop to the use of this article in health, have impaired its reputation very materially as a medicine. The habitual use of cordials is at present known to be much on a par with dram-drinking, and therefore, by those who have any character to lose, is indulged in with caution; they are also expensive medicines, and do not offer the same temptation to those whose object is to obtain a cheap as well as speedy termination of their complaints.

Under the head of alteratives the author adverts to the patent remedies sold under the names of "panaceas," "purifiers of the blood," &c., and which, producing no sensible, violent evacuation, profess to effect their cures by a slow and gradual operation on the system. Sometimes alterative ingredients are actually introduced into the nostrum; and in the case of a celebrated panacea, the success of which has far outrun that of all its competitors in the race in this country, there are good grounds to believe that all the activity it has ever exhibited is due to the corrosive sublimate dissolved in it. The testimony to this fact, it is true, is not undisputed, for while some analysts have distinctly detected the presence of the mineral, others to whose inspection the article has been purposely submitted by the inventor, have denied that it contained a particle of mercury in any of its forms. It is not difficult to reconcile this apparent contradiction, when it is considered with what perfect facility the composition of such an article may be changed from time to time, whenever, on the one hand, its inertness becomes too glaring and notorious, or on the other, public indignation is aroused by the mischiefs it perpetrates; mischiefs obviously due to the presence of some poisonous ingredient. That such a course has been pursued in regard to the article in question, seems probable, for no one, we are persuaded, who knows the extremely feeble character of its vegetable ingredients, and contrasts with this the extraordinary cures it is said to have effected in some cases, and the violent and deplorable effects which have resulted from its use in others, can honestly believe that no mineral has at any period of its history entered into its composition.

Under the head of diet, p. 101, our author attacks one of the most innocent forms which quackery has assumed among us, if indeed the term be with any propriety applicable in this connection. We refer to the exclusive vegetable doctrine of diet, which, though by no means new, has been revived in our days with some popularity and success. According to this doctrine, most of the inflammatory diseases with which mankind are afflicted, are owing to the state of system produced by the constant use of animal food; by this is engendered an habitual plethora, and a permanent predisposition to disease; a state, in fact, in which the slightest influence from abroad will suffice to disturb the balance of the circulation, and produce local or general derangement. To rectify this state of things, a strict adherence to vegetable aliment is enjoined, and the article most strongly insisted on for its beneficial qualities is bread. A branch of this vegetable or farinaceous system is constituted by the doctrine, that in cases of dyspepsia, accompanied with constipation, the sovereignst thing of all, as an article of diet, is bran bread. The virtue of the bran is of course to be found in the irritation which it causes to the mucous surface of the stomach

and intestines, by which the peristaltic action is promoted, and the evacuations rendered more frequent.

Whatever may be thought of the soundness of these doctrines, we repeat our conviction, that this is the most innocent form which quackery has assumed in this country. The facetious Abernethy, after rehearsing to his students the peptic precepts which have been held sacred from the age of Hippocrates, used to add, that by recommending these to their patients, they would be sure never to do any harm, inasmuch as they would never find any to follow them. We apprehend that the mischiefs caused by the vegetable system will, by parity of reason, prove very limited in extent. It wars against the inclinations of mankind, and is therefore destined to find little favour. Thompsonism will number its hecatomb of victims, for one who shall fall a sacrifice to farinaceous diet. Dr. T. tells us that a friend of his own lost his life by the pertinacity with which, while suffering from chronic diarrhœa, he adhered to the use of bran bread. Such an abuse of the vegetable doctrine, to use the mildest term for this conduct, cannot certainly be considered an argument against its legitimate application.

In speaking of the organs of respiration, among many judicious remarks, the author introduces an observation on asthma, in which we are not able entirely to concur with him. The term, he says, is applied without discrimination to every case in which difficulty of breathing is present; and he compares the use of this term in its application to diseases of the thorax to that of the word *sin*, as descriptive of every form of moral obliquity. We apprehend that neither in common nor in medical parlance, is the application of this term quite so sweeping as this comparison would seem to imply. The proximate cause of asthma is indeed obscure, and the remote causes are exceedingly various; but we consider the symptoms to be true to themselves, and for this assemblage of phenomena it is, at least, convenient, if not indispensable, to retain the name. That there is much of vagueness and even of serious error, in popular language on medical subjects, we freely admit; but, in this instance, both the term and its specific application are sanctioned by highly respectable authority, and we confess ourselves disposed to view them with favour.

In a short chapter on the structure, functions, and diseases of the skin, the author exposes the rashness with which astringent and other repellent applications are often made to cutaneous affections, and the disastrous consequences which often ensue to the general health. Occurrences of this kind are not very infrequent; and yet, it must be confessed, we often meet with cases where, from an undue apprehension of "striking the disease in," the most loathsome and disgusting eruptions are suffered to go on unchecked. Where a cutaneous disease has evidently alternated with an internal malady, or where the eruption is of long continuance and the patient advanced in life, it is certainly the part of prudence not to interfere. In the majority of cases, however, it will be found that the beneficent purposes of nature are not easily to be defeated by art, and that, if the continuance of the eruption is demanded by the general health, remedies applied for its removal will have little effect. The application of these principles to practice, however, requires the soundest discretion; and it implies a degree of folly little short of actual madness, to allow an unprincipled empiric to tamper with the diseases of an organ, the connections of which with the internal structure are so complicated and so obscure.

We are rather surprised that our author, in speaking of nostrums for the eye, should make no reference to the so-called oculist, who, a year or two since, was making a tour of imposition and extortion through our principal cities. This precious sample of humbug exhibited, for the satisfaction of the sceptical, a royal patent, in which he was styled oculist to the king of France, &c., and which at first persuaded many worthy persons that he must actually have enjoyed some consideration in the eyes of that monarch. It was soon discover-

ed, however, that these diplomas, regularly authenticated, could be purchased in Paris for a few francs, and this fact, when generally known, dissipated a portion of the mystery. His cures, however, partook somewhat of the marvellous; for many of his patients, who were absolutely blind when they made application for relief, found themselves suddenly able to perceive light. These effects, it is true, were transitory, seldom continuing beyond a few hours; and there is every probability that his principal agent was belladonna, and that its operation consisted simply in dilating the pupil, the effect of which, when the eye is rendered impervious to light, whether by cataract or an opaque spot on the cornea, is perfectly familiar to surgeons. That he should have been enabled by means like these to obtain more than an ephemeral reputation, even among the most ignorant, cannot be believed; but this was sufficient for his purpose; the affidavit of cure, signed with the name, or most generally with the mark of the grateful patient, served him wherewithal to figure in the public prints, and drew to him a few of the more wealthy, from whom he extorted, in anticipation, enormous fees. In this city he was slow in making an impression, and his tide of successful experiment soon began again to ebb. The sensation created by his pompous titles rapidly subsided, and the character of his remedial means was not long in being also detected and exposed.

In his chapter on female complaints the author departs somewhat from his leading purpose, in order to introduce his favourite theory of the cause of what he terms "weakness," by which we suppose him to mean leucorrhœa. This theory is announced in the following terms, the careful choice of which will elicit a smile from some of his professional readers.

"In almost every case of weak back, and debility, complained of by ladies, there is more or less of a determination of blood, or inflammation, about the back, or the internal organs adjacent; and this may in a great majority of cases be known by tenderness when pressure with the fingers is made on the spine, or near it. This test is seldom fallacious; and we believe it is present in nineteen cases in twenty when 'weakness' or debility is complained of. It so happens that almost invariably these cases are considered as pure weakness by quacks, and too often by medical men, members of the profession; and the obvious plan of treatment in debility is to restore the strength by tonics, stimulating drinks, and a generous diet. The tonic regimen only increases the difficulty; and not one in ten of those females who are thus affected can bear either tonics or stimulants, in the smallest quantity, without an aggravation of their complaint."

He afterwards instances the case of a lady who had been ill for ten years, and during that time had been subjected to the practice of many of the faculty, as well as a multitude of quacks. "She grew progressively worse; complaining of pain in the bowels, dyspepsia, dysentery, and certain other irregularities. As she never experienced pain in the back unless from direct pressure, that was never suspected as being the seat of the real mischief; and therefore remedies were addressed to those organs that seemed most to suffer." After the fair patient had suffered for ten years in the manner referred to, another physician, we are told, was called in, who cured her by applying cups to the back. What the precise facts in the above case were, or what conclusion the author designs his general readers to arrive at, by introducing it and the previous remarks, we are at some loss to determine. Was it a case of leucorrhœa depending on spinal disease? If so, it is not very surprising that it was misunderstood; and the practitioner was perhaps excusable in directing his treatment to the organs "which seemed most to suffer." But surely Dr. T. cannot mean to inform his readers, that in nineteen cases out of twenty, where leucorrhœa is present, the spine is the true seat of the morbid affection. Or if he candidly believes it to be so, still how, we ask, can the announcement of this opinion, accompanied with a censure on the course pursued by the great body of the profession in "female complaints," through the medium of a popular treatise, be reasonably expected to aid in the discouragement or suppression of quackery?

The next variety of quack, which comes under notice, is the natural bone-setter. This character, which is peculiarly common in the northern and eastern states, is usually a blacksmith and farrier, and commences his surgical career by operating on horses. He is ordinarily possessed of considerable muscular strength, which he is not slow in putting forth when occasion offers, and of rather more knowledge of the human structure than he chooses to acknowledge. He has a few favourite expressions, as that a limb is "withering," that a callus is formed, that a bone is out, &c., and where dislocation of the larger joints actually exists, can usually detect and reduce it. His strength and boldness also come in use, where a fractured bone has been allowed to unite irregularly; in which case he does not hesitate to fracture and reset it, however small the prospect of a perfect reunion. When right in his view of a case, he sometimes effects good by his fearless decision; when wrong, his strength renders him a fearful blunderer. The blinded cyclops is then a fit emblem of his trade, of his strength, and his ignorance. His manœuvres are terrible. Our author gives an instance in which a hip disease, mistaken for a dislocation, was treated by one of these operators. The attempts at setting the bones were persevered in till the child had repeatedly fainted from the torture; and the inflammation was, as might have been expected, so much aggravated by the violence employed, that the child died in a few days.

Among the vulgar prejudices to which empiricism makes the most frequent and most successful appeals, is that against mineral, and in favour of what are termed vegetable medicines. The notion that because a remedy is vegetable it must be innocent, that is, incapable in large doses of producing fatal effects, is a most absurd fancy, which its very absurdity seems to have perpetuated, since those who have known better have seldom judged it worth their while to attack it with any other weapons than those of ridicule. The fact is well known to every chemist, that with few exceptions all the virulent and active poisons known belong to the vegetable kingdom. The principal mineral poisons, employed in medicine, are corrosive sublimate and arsenic; while from the botanic kingdom, the region of primeval innocence, are furnished prussic acid, nux vomica, opium, and the other narcotics, croton oil, elaterium, poison sumach, &c. Calomel, against which so much outcry has been raised, can hardly, with any propriety, be termed a poison; since, before its dangerous effects are manifested, symptoms are produced which serve as a warning to discontinue its use.

Of the circumstances which serve to encourage the growth of quackery in this country, one of the most prominent, in the view of our author, is the variety of views and doctrines avowed among the regular members of the profession. The public are not, cannot be, ignorant of the fact, that in regard to the use and efficacy of some of the most important and familiar remedies, the greatest diversity of sentiment prevails. With some, blood-letting is the panacea for all human ills. If fever is present, it serves to lessen arterial action; if inflammation, to unload the congested part; if pain, to diminish the sensibility. If the pulse is too full, bleeding will reduce the amount of circulating fluid; if too small, it will remove the oppression under which the heart is labouring; if too slow, the brain is congested, and bleeding is still the indication. If the patient lives, it is the bleeding which has saved his life; if he dies, it is because depletion was not early enough commenced or long enough continued. In diametrical opposition to these Sangrados stand another class, who hold the abstraction of blood, under any and all circumstances, to be an irreparable injury; who point to the lancet as the little instrument of mighty mischief, more destructive than the sword, and who boast of curing all curable diseases without costing their patient a drop of the precious fluid which they regard in its totality as so essential to the maintenance of life. Similar conflicts of opinion exist in regard to emetics, cathartics, and all the leading classes of remedies in ordinary use; nay, we find men of education, experience and skill, utterly sceptical as to the benefit

of treatment of any description, and boldly avowing the opinion that nine-tenths of the diseases which afflict mankind had better be left to the unassisted powers of nature, than subjected to the officious interference of an uncertain art. While opinions thus various emanate from the oracles of medical wisdom, while contests the most fierce are waged in regard both to the theory and the practice of medicine, is it surprising that many should be tempted to turn away from the whole science as a mere imposition, and to accept the nostrum of the empiric as having as great a claim to confidence as the prescription of the titled practitioner. This influence, it is to be remarked, is not exerted solely or even principally upon the vulgar and the uneducated; it is the more intelligent and better informed who thus become disgusted with the pretensions of the learned, and persuade themselves that in resorting to the ignorant for counsel, they are but exchanging one form of uncertainty for another. It is obviously not our intention, any more than our author's, to defend the wisdom of such a conclusion; but only to show how it is arrived at even by persons who, on other subjects, reason with precision and act with prudence. They err in this case by not taking into consideration the whole of the premises on which a conclusion should be grounded. Granting all that can be urged against the uncertainty of the medical art, as practiced by its professors, these have an immeasurable advantage over the mere dispenser of nostrums. They prescribe according to some theory, more or less rational as it may be, for a disease which they recognise by its prominent symptoms, and for the recognition of which they are prepared by study; while the empiric shoots his poisoned arrows in the dark, and is at least as likely to destroy the patient as to annihilate the malady.

Want of space forbids us to enter into a more minute analysis of Mr. T.'s work, which, though disfigured by many inaccuracies of expression, and containing some illogical reasoning, is written in good spirit, and will convey much useful information to the general reader. That it will exert any considerable influence in staying the progress of quackery, in crushing this many headed hydra, we do not regard as very probable. As one folly is exposed and passes away, another comes in to take its place; one bubble bursts, and another promptly rises to the surface, and the process will continue to go on, while human cunning and human credulity, the principal ingredients in this turbid mixture, continue to act and react upon each other. Quackery cannot be put down by appealing to the judgment of the mass. What men are not reasoned into they will not be reasoned out of. The people must in this instance, as in others, be preserved from themselves and from their own follies by action from without. Empiricism should be put down by force of law. The offering for sale secret medicines, purporting to be specifics for certain diseases, by persons not qualified to practice physic, should be made penal, and punished by fine and imprisonment. That there is any hope of such a law in a community where public feeling on this subject is so strangely perverted, that actual murder may be perpetrated by the quack with the most perfect impunity, we are not so sanguine as to anticipate; but certain we are, that until some measure of this kind is adopted, quackery will go on to increase without limit. On this subject mankind will not grow wiser or more prudent by experience; the individual dupe receives indeed a severe and salutary lesson, and is deterred from again hazarding the same experiment; but his pride forbids him to expose his folly, and therefore his detection of the fraud is of little service to others. Credulity is an essential element in the human composition. The majority, too indolent to think or act for themselves, stand ready to be influenced in matters which concern their most important interests, by the boldest and most impudent pretender who lays claim to their confidence. Avarice too, and the hope of cheating the regular doctor out of his fee, will prove a never failing inducement to a large number to resort to nostrums, while another and not a small class, affected with painful and obstinate diseases, and wearied with the slow operation of the

remedies employed by the regular practitioner, at length apply in despair to the quack, as the most probable means of ridding themselves of their ailment, or of escaping from an existence which suffering has rendered a burden. Where the latter forms the prevailing desire, they are not unfrequently gratified in the result of their experiment.

It is the greatest mistake to suppose that the increase of empiricism is an injury to the regular practitioner. He may indeed suffer in reputation by being confounded with the base pretender who assumes his title; but by all the poisons which are forced down the throats of the community, under the name of specifics, his business is certain of being increased in the end. The patients who pass by his door to proceed to the next emporium of quackery will usually return sooner or later; or if they do not they are usually such as he can well afford to lose. Wherever empiricism most abounds, there is ever the widest field for the exertions of the intelligent and cultivated practitioner. Disease, it is true, will present itself in more complicated forms, and with more obstinate character, than where the opportunity is enjoyed of always prescribing at the outset; but as a necessary consequence the average period of treatment is prolonged, and the receipts of practice proportionally enhanced. The physician has nothing to fear from the rivalry of the quack, and little to gain by the suppression of his nefarious trade. It is the community as a whole which is interested in this matter, and it is those who legislate for the community, that are called upon to move in it with activity and effect. If the public voice, as expressed in the laws, will not command this nuisance to be abated, the public health and welfare must continue to suffer. E. G. D.

Art. XIII. *A Treatise on Digestion and the Disorders incident to it, which are comprehended under the term Dyspepsia. Adapted for general readers.* By William Sweetser, M. D. Boston: 1837. 8vo. pp. 359.

There is probably no class of diseases in reference to which a greater amount of real good would be effected, could the public generally become well informed in relation to their nature and causes, than those of the digestive organs. From the frequency of their occurrence, the intense sufferings to which they often give rise, and their occasional connection with extensive and, in its more advanced states, generally incurable disease of the alimentary and other organs, they rank among the most distressing and important maladies to which the human frame is liable. Being in the majority of instances produced by improprieties in diet and regimen, or by a life of inactivity, anxiety, luxury, or dissipation, their prevention, and, to a certain extent, their cure, depends upon a strict adherence to hygienic rules, which we can seldom expect will be submitted to, so long as the patient is himself unable to appreciate their importance, from his ignorance of the structure and functions of the digestive organs, and of the various agencies by which those functions are liable to be distributed, or are maintained in a state of healthful vigour.

To introduce the general reader to some acquaintance with the function of digestion and the disorders to which it is incident, is the object which Dr. Sweetser had mainly in view in the publication of the treatise before us; and this object it appears to us to be, upon the whole, well adapted to effect. The very full and accurate physiological history of digestion, and the general remarks upon the food of animals and man, which occupy the first one hundred and fifty-nine pages of the treatise, constitute a very appropriate introduction to the consideration of the several causes by which a disarrangement of the digestive function is produced, and the series of phenomena generally comprehended under the term dyspepsia, finally established.

The remarks of the author upon the symptoms, causes, and treatment of the

disorders of digestion are characterized throughout by much good sense; his therapeutic directions being confined chiefly to a proper regulation of diet and regimen. Active medicinal agents, which, as Dr. S. remarks, are seldom called for in ordinary cases of dyspepsia, especially in the early stages of the disease, and are never admissible save under the immediate direction of a medical adviser, are noticed by him only with the view to discountenance their employment.

Although we are decidedly opposed to the generality of popular works on medical subjects, we can with great propriety recommend the treatise of Dr. S. as one well adapted to convey to general readers much useful information; a proper use of which may be the means of preserving them from much of that amount of moral and physical suffering, incident to disorders of the digestive organs. D. F. C.

Art. XIV. *Treatises on the Law of Mortality, and on Annuities.* By Joshua Milne, Esq. Edinburg: 1837.

These treatises form the articles in the seventh edition of the Encyclopædia Britanica, under the heads of Human Mortality, and Annuities. In the first the able author has furnished a succinct history of the formation of the bills of mortality from the first Roman *Census*, established by Servius Tullius, passing over a long lapse of time, and reviving in England and Germany in the sixteenth century, from which period to the present, the parish records, and other registers, established for the purpose in most civilized countries, have been steadily improving so as to enable us now to compute the rates of mortality for different places, and even whole states, with very great precision. In the course of this historical review, the author has made particular reference to the paper published in the first number of this journal, containing observations relative to the mortality, and other matters connected with the *movement* of the population of Philadelphia.

Mr. Milne's treatises contain a rich fund of well digested information upon every point connected with the laws of human mortality, the probabilities of life at all ages, the average duration of life, and the application of such information to life insurance, and the granting of annuities. G. E.

Art. XV. *An Essay on the Relation between the Respiratory and Circulating Functions.* By Charles Hooker, M. D. Read at the Annual New Haven County Meeting of the Connecticut Medical Society, April 12, 1838. Boston, 1838. 8vo. pp. 47.

The object of Dr. Hooker in the essay before us, is to point out the diagnostic and therapeutic indications deducible from the relative frequency of the respiration compared with the frequency of the pulse.

Although we are not prepared to attach so much importance or value to the relation between the state of respiration and of the circulating functions, either as a means of accurate diagnosis, or to indicate the remedial measures to be pursued in the various diseases of the thoracic organs, we have, nevertheless, been not a little interested, and perhaps in some measure instructed, by the author's remarks, and we fully agree with him that, heretofore, too little attention has been paid to many of the points involved in the general subject of which he treats.

The comparative frequency of the respiration and the pulse in health, the

author has ascertained, from constant and careful observation, during a period of several years, to be 1 to 4½; that is, there is one respiration to every four and a half pulsations of the heart.

A disproportionate increased frequency of the respiration, as the author has endeavoured to show, affords the general indication that there is some impediment existing to the freedom of respiration, which may be owing, 1st, To *disorder of the lungs or air passages*, as in pneumonitis, phthisis, œdema of the lungs, or any affection of the lungs which prevents a portion of them from being freely permeated by the air, or any disorder of the bronchi or bronchial membrane which impedes the communication between the air and the blood within the lungs; or 2ndly, To some *mechanical impediment* to the motions of respirations; or 3dly, To *imperfect function* of *the organic nerves* of the lungs.

A disproportionate diminished frequency of the respiration, indicating a want of energy in the nerves which control the respiratory motions, is, according to our author, common in typhus fever, and in many other diseases. Imperfect function of the motor respiratory nerves, occasions a disparity between the respiratory and circulatory functions, by causing a disproportion between the quantity of air respired, and that of the blood circulating through the lungs, while, imperfect function of the organic or *arterializing* nerves produces the same result, by impairing the influence of the respired air on the blood.

In pneumonitis the relative frequency of the respiration is, according to Dr. H., one of the most constant symptoms of the disease.

"As in other febrile diseases," he remarks, "the pulse is commonly frequent, but the increased frequency of the respiration is altogether disproportionate to that of the pulse. In cases of extensive engorgement, it is not uncommon that the respiration is 45 in a minute, when the pulse does not exceed 90; the ratio becoming as one to two. In extreme cases, the respiration becomes even 60 or 70; and in children I have occasionally noticed it 140 or 150. In less degrees of engorgement, the ratio is as 1 to 3, 3½, or 4."

Dr. H. considers that in the early stages of *phthisis*, the disparity between the respiration and the pulse may be regarded as one of the most valuable signs. Frequently indeed, when there are no prominent general symptoms, except, perhaps, a progressive debility and emaciation, the fact of these being attended with a disproportionate increased frequency of respiration, affords, according to our author, a strong presumption of tubercular deposition. A simple general debility, he remarks, increases the frequency of respiration; but it occasions a proportionate increased frequency of the pulse—the ratio of 1 to 4½ being still preserved; whereas, if the lungs are obstructed by the tubercles, the respiration is out of proportion to the pulse.

Dr. H. admits, however, that in phthisis, the abnormal ratio between the respiration and the pulse is a more uncertain criterion of the *amount* of pulmonary obstruction than in acute diseases.

"The scrofulous affection which produces the tubercular deposition in the lungs at the same time impairs the processes of digestion and sanguification—hence, the quantity of blood in the system is much less than in health, the pulse is weak, and each contraction of the heart sends a small quantity of blood to the lungs; the quantity of blood to be aerated in the lungs is, therefore, less than natural, and a smaller quantity of air is required in respiration. In advanced stages of phthisis, there is so little blood in the system, that a very small proportion of healthy lung is sufficient for its arterialization, with only a moderate acceleration of the breathing. I have examined subjects who had died of this disease, in whom scarcely a tenth part of the lungs appeared to have been fit for respiration, when, a few days before death, with a pulse of 130 or 150, the respiration had not exceeded 35 or 40."—

Œdema of the lungs is set down by the author as a very common cause of frequent respiration. This leads him to introduce a variety of pathological remarks in reference to this affliction, of a very interesting character.

"I am certain," he observes, "that no part of the system is so commonly the seat of dropsy as the lungs; and, in general anasarca, it is commonly in the lungs that the disease is first manifested."

Neither of these propositions are supported, we are certain, by the result of our own observations.

"There are many cases," Dr. H. remarks, "which appear to be intermediate between a proper inflammation and an acute dropsy of the lungs—cases which might be termed œdematous inflammation. Such cases certainly have claim to the character of a primary and idiopathic disease. Of this character was the prevailing affection of the lungs in the epidemic influenza in New Haven, in the winter of 1831–32. In many cases of that disease, extreme frequency of the respiration, as compared with the pulse, constituted almost the only symptom of thoracic affection."

"In cases of chlorosis, in most of the chronic disorders of menstruation, in general debility, and in cachectic diseases generally, swelling of the ankles and other symptoms of general anasarca commonly occur. In almost all such cases I have found œdema in the lungs, before its manifestation in other parts of the system, and frequently the lungs are the only part in which it is to be observed."

"Attention, we are told, to the relative frequency of the respiration will afford suspicion of the disease; and a slight dulness observed on percussing the posterior portions of the chest after the patient has been lying on the back, or the same observed about the inferior lobes of the lungs after sitting or standing, with a dull respiratory sound corresponding to the dulness of percussion, will render the diagnosis almost certain. If the serum infiltrates into the air cells and the minute bronchi, as frequently occurs, especially when the affection has any thing of an inflammatory character, the stethescope detects a sound like that produced by squeezing a wet sponge, by wringing wet clothes, or by the effervescence of fermenting liquors—a feebler and finer sound than the crepitation of proper inflammation."

Should the accuracy of the author's remarks, in regard to œdema of the lungs, be borne out by future, more extended observations, we shall acknowledge our indebtedness to him for an important pathological fact of which we were before entirely ignorant; we allude more especially to œdema of the lungs being the general *precursor* of anasarca.

The pathological effects of imperfect aeration of the blood, which had been treated of by Bichat and some subsequent writers, more especially as the immediate precursors and causes of death, Dr. H. has observed to be manifest through the progress of typhus fever, typhoid pneumonia, delirium tremens, night-mare, asthma, and other diseases. What is commonly termed congestion of the brain, he has endeavoured to show is simply a deterioration of the blood, caused by the imperfect aeration, a prominent example of which occurs in the disease termed congestive typhus.

The common occurrence, and the injurious effects of this imperfect aeration of the blood suggests, in the opinion of Dr. H., the important general therapeutic indication, to promote the arterialization of the blood, or, in other words, to remedy deficient respiration.

The medicinal agents which aggravate deficient respiration, by increasing the circulation, or by diminishing the respiratory function are first detailed. These are alcohol and fermented liquors, opium, quinine, serpentaria, and all articles which operate to increase the action of the heart more than that of the lungs. A nutritious diet, by invigorating the circulation, and increasing the quantity of blood, and muscular exercise, by hurrying the circulation commonly have an injurious effect, in cases of comparative infrequency of respiration. This is true also of remedies which operate directly to diminish the frequency of respiration, as full doses of most of the narcotics.

The remedies which promote the arterialization of the blood are:—

1*st*. Those which diminish the action of the heart and arteries, as the antiphlogistic remedies generally; bleeding, antimony, ipecacuanha, the neutral

salts, digitalis, ergot, sanguinaria canadensis, colchicum, veratrum, tobacco, lobelia, and polygala senega.

2nd. Remedies which excite and invigorate the motor respiratory nerves; ether, camphor, ammonia, musk, castor, assafœtida, oil of amber, cajiput oil, and the volatile terebinthinates, as the oil of turpentine and that of the *abies canadensis.*

"These remedies are commonly termed diffusible stimulants; but with the exception of the volatile terebinthinates, they have little, if any, direct stimulant operation on the heart. Their main operation is on the nervous system. They produce cerebral excitement, relieving drowsiness, coma, and low delirium, and in virtue of this operation they call the *aid of the will* to assist in respiratory action; and at the same time they appear to have a direct exciting operation on the respiratory nerves."

Coffee and green tea are, we are told, mild but valuable remedies of this class. External vesicatories and irritants are valuable adjuvants in the cases to which the foregoing articles are chiefly adapted.

3d. Remedies which excite and invigorate the arterializing nerves of the lungs. Many of those which are enumerated as exciters of the motor nerves, have also, in some degree, a similar effect upon the organic nerves of the lungs. The remedies now to be enumerated appear, however, to operate principally upon the latter, though some of them have also an evident operation on the motor nerves. They are, nitrate of silver, arsenical solution, chlorine, cantharis and capsicum. Tetrakinitrate of bisthmuth, sulphate of zinc, and bisulphate of copper, have a less degree of the same operation. Mustard, and other pungent tetradynamous plants, also belong to this class.

4th. Ventilation.

5th. Remedies which obviate mechanical impediments to respiration.

6th. Those which excite secretions vicarious of respiration; as those of the bronchial membrane, the liver, skin, kidneys, salivary glands, and the uterus.

The following remarks are made by our author upon the remedial effects of calomel in certain of the disordered conditions of the respiratory function.

"Of the remedies which act upon this organ (the liver), and thus obviate the effects of imperfect arterialization of the blood, *calomel* is the most important. This remedy, a notice of which has been deferred for this place, on account of its peculiar operation, is one of the most important of the class of remedies before adverted to, which operate *to excite and invigorate the arterializing* nerves. It appears, indeed, to have an exciting operation on all the organs supplied by the great sympathetic nerve; and hence it produces a general effect on the secretions of the system. Its operations on the liver, the mucous membranes, the skin, and the salivary glands, are well known; and most practitioners must have noticed the relief afforded by calomel in cases of cerebral and general nervous oppression; subsultus, stupor, coma, muttering delirium, &c., symptoms which, I have endeavoured to show, are commonly connected with imperfect respiration."

From the foregoing brief sketch of Dr. Hooker's essay, our readers will be enabled to understand the leading propositions which the author is desirous of establishing, and to form some judgment in relation to their general accuracy and importance.

The only indication afforded by a disproportionately increased frequency of the respiration compared with that of the pubic, is, that some impediment exists to the freedom of respiration; upon the nature, seat, and extent of that impediment it is capable of throwing no light whatever. Hence, although it is important that the physician should be aware that a disproportionately increased frequency of respiration constitutes an almost invariable phenomenon of disease of the pulmonary apparatus, he must still depend entirely upon other symptoms for the establishment in each case of an accurate diagnosis; consequently, the fact of a disproportion existing between the frequency of the respiration and of the pulse, is of very little, if any, value in determining in any instance the proper therapeutic measures to be pursued.

The essay before us, contains unquestionably many very judicious and interesting hints; its main defect is, that the author deals too much in general statements, in support of which he has neglected to adduce a sufficient array of apposite facts. In more than one instance we find him drawing his most important deductions from pathological as well as physiological opinions, the accuracy of which will admit of very considerable doubt.

The reference of certain of the disordered conditions of respiration to an ab normal state of the respiratory nerves, is by no means original with our author. Several of the Continental physicians had already adverted to the fact, and have pointed out the dependence upon disease of those nerves of many affections simulating in their phenomena, organic disease of the heart, lungs, and other thoracic viscera, the removal of which, they insist, is only to be effected by restoring the nerves of respiration to their normal state. D. F. C.

Art. XVI. *The Epidemic Yellow Fever of Natchez. 'In medio veritas.'* An Essay read before the Jefferson College and Washington Lyceum, Dec. 2, 1837. By J. W. Monette, M. D. Natchez, 1838. 12mo. pp. 83.

The title of this work does not convey a strictly correct idea of its contents. The account of the epidemics of yellow fever which occurred in Natchez in the years 1817, 1819, 1823, 1825, 1829, and 1837 occupying but twenty-six pages, while the remainder of the Essay is devoted to an exposition of the author's views in relation to the general cause by which yellow fever is produced,—the circumstances connected with the occurrence of the disease in Natchez, being adduced merely as corroboratory of those views.

The space left at our disposal will not permit us to enter into an examination of the very important points embraced in the Essay of Dr. Monette, nor to test the accuracy of his views by the vast accumulation of well attested facts we now possess in reference to the rise and progress of yellow fever in our own and other countries—we shall merely lay before our readers an outline of these views as nearly as possible in the author's own words, leaving each one to determine for himself their correctness.

According to Dr. Monette, the immediate cause of yellow fever as an epidemic, is a subtle, gaseous poison in the atmosphere,—how this poison is generated, or from what it is thrown off, we have no certain knowledge.

To produce yellow fever as an epidemic, he conceives that there exist three grades or stages of action in the production of the infection:—first, the miasm, or simple basis, which alone is innocent. Second, Its combination with impure, or exhausted air, or with air deprived of its healthy, respiratory properties, and charged with animal exhalations: in this state he denominates it *infectious air*, or malaria. In this state, it is a strong predisposing cause of disease, and a suitable *nidus* for the reception and extension of personal infection. Third, Infection, or the union of personal infection with infectious air. In this state, it is an aerial ferment, and when respired, becomes the active, predisposing, and exciting cause of yellow fever. The *miasm* of yellow fever, he considers to be

"A subtle, gaseous, invisible, and inoderous matter, generated by the action of the sun, or by solar heat, upon the *atmosphere*, independently of any effluvia or fœtor from the decomposition of animal matters, and independently of any exhalation from marshes, dry earth, or vegeto-animal compounds, or any thing of those kinds."

He believes it to be "the result of some unknown combination of the solar rays with the atmosphere, which takes place at all times and in all places, while the temperature in the shade is steadily between 88° and 98° of Fahrenheit, or between 110° and 130° in the open sun: that its specific gravity is much greater than that of common air, and that it possesses the common properties of aerial fluids."

In its simple state this miasm is innoctious, but it becomes morbific by combination with impure air.

"This combination, when not concentrated, or when moderately diluted with free air, conveys a very slight predisposition to yellow fever; but when concentrated by close sultry weather, in a dense population, the predisposition will be so strong that sporadic cases, under *highly exciting* causes, will occur,—especially among strangers, and those who are unacclimated. Those who are acclimated will escape."

"So long as there is sufficient agitation and change of the air by winds, the miasm will not accumulate in sufficient quantity to produce yellow fever as an epidemic; but when sufficient miasm is produced and accumulated, the malarious combination, which likewise requires several days of calm, sultry weather, will proceed at a still lower temperature."

"This malarious condition of the local atmosphere of any city, or portion of a city, may be so concentrated as to produce a strong predisposition to yellow fever in many of the inhabitants, without actual disease, until a few cases are excited into action by highly exciting causes, when *infection* is generated, and speedily the malarious district becomes the infected district, which result would have been prevented by a storm, or change of weather previous to those cases."

"When the malarious combination is sufficiently concentrated for this purpose, a large quantity of *infected air*, brought from an infected district, or a large number of cases of yellow fever introduced from another point, will convert that malaria into infected air, and produce an epidemic likewise."

"Infected air is supposed to be more volatile than *miasm*, to be volatilized by the sun, and partially condensed in the cool dews of night: hence when there is much infection in the air it may be more dangerous to be out at night, than in meridian day."

"The infection insinuates itself into blankets, feather beds, woollens, and other porous articles, and in this way may be carried from one place to another. But the infected air thus transported will produce the disease only in those who breathe it before it is diluted with common air: it might spread when taken into a close room and kept in stagnant warm air."

"Like *miasm* it is heavier than common air; and settles in low damp places."

"It is supposed to adhere, in some manner, to wood and such like bodies, especially, more than to brick, stone, plaster, &c."

"Although yellow fever is very often a disease of local origin, it *may*, under peculiar circumstances, be carried from one city to another, and there propagated.

"Accordingly epidemic yellow fever may be averted sometimes by one or all of the following measures, enforced at a time, when, according to the principles set forth, the malaria is forming rapidly, viz:—

"1. By a dispersion of the greater portion of the citizens to the country.

"2. By removing from the city, and especially from the districts usually infected, all *strangers*, or those who have not become acclimated by a residence of two or three years, and who would in course be the first attacked.

"3. By prohibiting the introduction from foreign places of infected air, or *fomites*, or patients labouring under yellow fever, during the prevalence of malarious accumulations.

"The vicinity of any of the large bayoux, or gullies, about Natchez, is more dangerous as a residence than more remote points: these ravines are the reservoirs in which the malaria mostly accumulates before it is dispersed through the city by gentle winds: of course persons should avoid them in the sultry, autumnal months.

"When the infection has spread, or is beginning to spread, the only safety for those who are strangers, or unacclimated to yellow fever infection, is speedy flight: for no disinfecting agents heretofore known, or tried, possess any power to destroy the infection of yellow fever in the general air, cold alone excepted.

"Those who seek safety in flight, should carry with them as few bulky, light articles, of a woollen or porous texture as practicable, lest they might generate an infected air in their retreat. They should not return to their houses until after cold winds and frosts, during which their rooms, bedding, &c. have been freely exposed to circulation and to the action of the frost." D. F. C.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *Cerebral extremity of the Optic Nerve.*—Anatomists do not agree in their descriptions of the connection of the optic nerve with the brain, some considering this nerve as arising from the thalami nervorum opticorum, and others only from the optic tubercles. Mr. Solly states, that if the nerve just mentioned be carefully traced from its commissure backward, it will be found to be connected to the tuber cinereum. "After crossing the crus cerebri, to which it is connected with membrane, it divides," he adds, "into a superficial and deep layer: the superficial layer is that which is described in most anatomical works; the deep layer, which is thin and flat, plunges partly into the substance of the thalamus and partly into the corpus geniculatum. Those fibres which go through the corpus geniculatum are separated into delicate threads by cineritious neurine, as the motor tract of the spinal cord in the corpus striatum. Those fibres which plunge into the thalamus are stronger and more distinct, and after spreading into rays are lost in its substance.

"This arrangement may be seen after raising the nerve from the crus cerebri, either by tearing its fibres very carefully in a brain previously hardened in alcohol, or by making a longitudinal perpendicular section of the optic nerve in a recent brain, right through the corpus geniculatum and thalamus; when one layer of white neurine will be seen on the surface of the corpus geniculatum, and another just passing through its anterior part, but principally through the substance of the thalamus, separated from the first by the posterior and superior portion of the grey matter of the corpus geniculatum."—*London Medical Gaz.*, Feb. 1838.

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2. *Fibrous membrane beneath the Pleura Pulmonalis.*—M. Bazin has been led by extended investigations into the structure of the respiratory organs of vertebrated animals, to the conclusion that the lungs, like other organs, possess a proper capsule. He remarks that capsular envelopes are found to exist in three states: 1, a fibrous net work with large interstices, frequently taken for cellular tissue; 2, a complete fibrous membrane, whose density and thickness may be variable; 3, an osseous plate. The capsule of the lungs, in most animals, presents the first condition, that which exists in man; but in the elephant, a distinct fibrous membrane is met with, consisting of bundles of parallel fibres interlacing at certain points with others, like the muscular coat of the bladder. The lung of a panther, which died of phthisis, presented M. Bazin with a hypertrophied condition of this membrane, which in the healthy state of this animal is not thicker than in man.—*B. and F. Med. Rev.* from *Annales d'Anat. et de Physiol.*, No. 1, 1837.

GENERAL ANATOMY AND PHYSIOLOGY.

3. *On the Gases contained in the Blood. Oxygen, Azote, and Carbonic Acid.* —It has hitherto been generally admitted, that the carbonic acid is formed directly in the lungs by the combination of the oxygen of the air with a part of the carbon of the blood. Dr. Stevens and Hoffman have shaken this belief, by affirming that they have obtained carbonic acid from venous blood by agitating it with hydrogen. M. G. Magnus has instituted a number of experiments with a view of verifying this result and following up the consequences; and his results are so interesting that we are induced to lay the following abstract of them before our readers.

M. Magnus passed through blood a current of hydrogen gas, previously washed with a solution of potash and lime water. As the blood became very frothy in this experiment, the vessel in which it was contained was made to communicate with a larger vessel, which received the foam. A constant current was thus kept up, and at last passed into lime water, which, after the lapse of a certain time, became opaque.

The result was the same whether the blood was immediately excluded from the air on leaving the vein, or collected over mercury by a tube introduced into the jugular vein of a horse.

When nitrogen was substituted for hydrogen, carbonic acid was exhaled from the blood in the same circumstances; and finally, lime-water was rendered turbid by the gas exhaled from blood under the air-pump, at a pressure not capable of supporting more than an inch of mercury.

The author infers that carbonic acid exists in venous blood before it reaches the lungs, and that it is not produced there by the oxydation of carbon.

Dr. Magnus endeavoured to determine the proportion of carbonic acid which may be separated from the blood, by causing it to disengage with hydrogen, and absorbing it with caustic potash in Leibig's apparatus. He did not succeed in ascertaining the precise quantity of this gas in the blood, as he only succeeded once in carrying on the experiment, without the blood becoming putrid, till hydrogen no longer carried over carbonic acid. His experiments, however, induce him to admit, that the blood contains, at least, one-fifth of its volume of carbonic acid. He obtained the following results:

Human Blood. Cubic centimetres.	*Carbonic Acid.* Grains.	Cubic cent.
66.8	0.033 =	16.6
59.8	0.0055 =	12.8
62.9	0.044 =	22.2

at the end of twenty-four hours, when the blood emitted no odour.

Blood. Cubic centimetres.	*Carbonic Acid.* Grains.	Cubic cent.
66.8	0.0495 =	24.9
59.8	0.0475 =	23.9
62.9	0.0675 =	34.0

Atmospheric air and oxygen, employed instead of hydrogen to drive off the carbonic acid, succeeded equally well. Hence, if carbonic acid exists in venous blood, a separation must take place according to the laws which regulate the escape of gas dissolved in a liquid, when this liquid is brought into contact with another gas.

A proportion of oxygen, or of air, will be therefore absorbed, corresponding to the quantity of carbonic acid given off, in accordance with the laws laid down by Dalton, regulating the absorption of different gases by a liquid. To prove this point, it was necessary to demonstrate, by another experiment, that arterial blood contained oxygen; for it was the sole means of showing that oxygen is not immediately converted into carbonic acid in the lungs. This was necessary also to combat the notions of Gmelin, Mitscherlich, and Tiedemann, that the carbonic acid, disengaged from blood, is derived from bicarbonate of soda in solution.

Dr. Magnus first endeavoured to procure the gas disengaged from blood by causing it to pass into the vacuum of a barometer; but this was inconvenient, and he invented another method and an instrument, called a short barometer. We shall

not describe the method or the instrument further; but merely state the results of his experiments, carefully made by causing the arterial, or venous blood, to pass directly into the instrument without coming in contact with the air.

	Cubic Centimetres.				
Horse's blood - - -	125	furnish	9.8	of gas	5.4 carbonic acid 1.9 oxygen 2.5 nitrogen.
Venous blood of the same, taken four days after the arterial blood - - - -	205	"	12.2	"	8.8 carbonic acid 2.3 oxygen 1.1 nitrogen.
The same blood - -	195	"	14.2	"	10.0 carbonic acid 2.5 oxygen 1.7 nitrogen.
Arterial blood of a very old horse in good health - -	130	"	16.3	"	10.7 carbonic acid 4.1 oxygen 1.4 nitrogen.
The same blood - -	122	"	10.2	"	7.0 carbonic acid 2.2 oxygen 1.0 nitrogen.
Venous blood of the same horse collected three days afterwards	170	"	18.9	"	12.4 carbonic acid 2.5 oxygen 4.0 nitrogen.
Arterial blood of a calf -	123	"	14.5	"	9.4 carbonic acid 3.5 oxygen 1.6 nitrogen.
The same blood - -	108	"	12.6	"	7.0 carbonic acid 3.0 oxygen 2.6 nitrogen.
Venous blood of the same calf collected four days afterwards	153	"	13.3	"	10.2 carbonic acid 1.8 oxygen 1.3 nitrogen.
The same blood - -	140	"	7.7	"	6.1 carbonic acid 1.0 oxygen 0.6 nitrogen.

This table shows that not only venous blood, but that arterial also contains carbonic acid, oxygen and azote. Further, that relatively to the carbonic acid, arterial blood contains more oxygen than venous blood.

The mean proportion of gases obtained was from one-tenth to one-eighth of the volume of blood employed, and this is evidently but a small part of the gases in the blood, since by means of hydrogen, a volume of carbonic acid may be obtained equal to one-fifth of the volume of blood. This difference results from the imperfection of the apparatus.

The composition of the gases collected was determined by means of potass for the carbonic acid, and the eudiometer for oxygen.

Imperfect as they are, these experiments agree on this point, that the quantity of oxygen absorbed is nearly the same as that of the carbonic acid expired. If, then, we separate the whole quantity of gas contained in the blood, we ought to find in arterial blood precisely the same excess of oxygen as there is a deficiency of carbonic acid in venous blood. But in the present state of things we cannot arrive at such precise results.

The preceding researches, nevertheless, suffice, at least, to prove that the formation of carbonic acid is not effected solely in the lungs. This fact results principally from the difference observed between the relative proportions of carbonic acid, oxygen and azote in arterial and venous blood. The excess of carbonic acid in the latter cannot be explained, except by admitting that this gas is formed in the blood, or is absorbed by this fluid during the circulation. It is also very probable, from the above experiments, that the oxygen inspired is absorbed in the lungs, introduced into the system by the blood, and circulates with it so as to serve in the capillary vessels for oxygenation, and probably also the formation of carbonic acid.

Farther, M. Magnus accounts for the change of colour which the blood under-

goes in the lungs, by the fact of the colour of the blood becoming darker when it absorbs carbonic acid, and he says that he has observed venous blood become of lighter tint in proportion as the carbonic acid was abstracted from it by a current of hydrogen. These results are in accordance with those of Engelhart and Stevens.—*Journ. de Pharm.*, Dec. 1837.

4. *Experiments on the Spermatic Animalculæ, and on some of the causes of Sterility in Women.*—The following highly interesting observations on this subject were communicated, a short time since, to the Royal Academy of Sciences of France, by M. Donné.

The spermatic animalcules (*zoospermes*) have been submitted to numerous examinations since the days of Lewenhœck, who was the first to describe them with any degree of accuracy; but hitherto little progress has been made in the discovery of their natural history, or of the part which they perform in fecundation.

M. Donné has studied them in a new point of view. He placed them in contact with the principal fluids of the body, for the purpose of watching the effects of these fluids on their vitality, and general phenomena.

By following out this train of enquiry, he has been led to conjecture that certain changes in the properties of the mucus of the vagina and of the uterus may exercise a deleterious influence on the animalculæ of the male semen, and may thus as effectually prevent impregnation, as if there was a radical defect in the female organs of generation.

In this point of view, we perceive that some light may possibly be thrown on the hitherto most obscure subject of *sterility.*

M. Donné commenced his researches by examining the effects of the blood itself, of milk, of the healthy vaginal and uterine mucus, of the purulent discharge in syphylis and in gonorrhœa, of the saliva, and of the urine on the spermatic animalculæ. He found that they continued to move and live in some of these fluids; while in others they immediately perished.

Thus blood, milk, and pus did not seem to have any visible effect upon them; but the urine and the saliva appeared to kill them at once. The mucus of the vagina and of the uterus was, as might be expected, perfectly innocuous; even the presence in it of new infusoria—which have been discovered by M. Donné in certain vaginal discharges, and to which he has given the name of *trico-monas*—did not appear to affect the spermatic animalculæ.

There are some cases, however, in which the vaginal and uterine mucus has a noxious influence. The investigation of this point constitutes the most important theme in M. Donné's memoir. He has found, we are told, that the mucus of the vagina in some women, apparently in perfect health, is such that the spermatic animalculæ perish immediately in it.

This noxious quality belongs sometimes to the vaginal, at other times to the uterine mucus. Having satisfied himself of this fact, he next enquired whether the mucus exhibited any appreciable changes of quality from its normal properties and condition; and he thinks that he has succeeded in discovering certain traces of such changes in the chemical constitution of the secretion.

He says that the mucus of the vagina, from the vulva to the os tincæ, is always *acid*, whereas that of the cervix and body of the uterus is always *alkaline*.(!) Now he supposes that in certain habits and in certain states of the system, there is a disposition to excess of acidity in the one fluid, and to an excess of alkalinity in the other. The probability of these novel ideas rests upon the results of several experiments, which M. Donné has lately performed.

The second part of M. Donné's Memoir is occupied with the investigation of involuntary seminal discharges. This subject has been recently examined by M. Lallemand of Montpellier; but his work is rather of a practical than of a physiological nature.

The chief object of our author's researches has been to discover, if possible, some sure diagnostic signs, by which the presence of seminal matter may be recognised in the urine. He has very satisfactorily shewn that the signs, which the Montpellier professor has pointed out for this purpose, are quite nugatory. The chief of these are the thick and troubled state of the urine, its sickening fetid

odour, a cloudy flakinesss through it, and a glairy filamentous and greenish-coloured deposit adhering to the bottom of the vessel.

Now all these characters may exist in urine, which has no admixture of seminal fluid; and, on the contrary, spermatic animalculæ have been detected by the microscope in urine, which was quite limpid and transparent, or perhaps only slightly mucous.

It is by the use of the microscope alone that we can hope to discover the presence of the seminal fluid; and this mode of diagnosis is the more satisfactory, as it seems that the characteristic form of its animalculæ is not at all altered by the action of the urine. As their specific gravity is greater than that of the urine, they always fall to the bottom of the vessel; and thus the smallest quantity of semen is readily discovered.

To remove all source of ambiguity, M. Donné has made several experiments to ascertain whether there is ever semen present in the urine, when the person is in perfect health, and has no symptom whatsoever of seminal weakness.

He thinks that he has quite satisfied himself that such is never the case in health, unless, indeed, there has been an emission shortly before the urine was discharged; for under these circumstances there are always some animalculæ discoverable, according to his researches. With the exception of such a case, he has never detected them in the urine of a person in health; and he therefore points out the great importance of attending to this symptom—the existence of spermatic animalculæ in the ordinary urine—before the disease has made much progress.

The memoir concludes with the reports of several cases, in which the existence of seminal weakness was suspected, and where M. Donné was requested to examine the urine with the microscope. In some the presence of the spermatic animalculæ was readily discoverable; while in others the suspicion was proved to be groundless.

In closing these brief remarks, we cannot too urgently impress on the attention of medical men the very high importance of using the microscope more frequently, than they have done hitherto, in examining the products, healthy as well as morbid, of animal life. In conjunction with the valuable assistance of chemistry, this simple instrument promises to reveal many of the mysteries of life and of its wonder-working operations.—*Med. Chirurg. Rev.* from *Gaz. Méd. de Paris.*

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5. *A new mode of increasing the Heart's action for restoring the powers of life in persons apparently dead from drowning, or syncope.* By John Hyslop, Esq.—Some years ago, I had occasion to bleed a lady, and abstracted upwards of thirty ounces of blood, whilst she was in bed. About three hours afterwards, on attempting to rise she fainted. The family being in great alarm, I was sent for, and when I got to the bedside, I found that another practitioner was in attendance. He said to me, "your patient is dead." The basin of blood remained still on the table, and I was in great uneasiness on account of the lady's condition, and I confess I also dreaded the effect of the largeness of the bleeding. Spirits of ammonia had been sent for, but deglutition was suspended; a flexible tube was sent for, and I became very much alarmed.

In this state of anxiety of mind, and without having any precise purpose in view at the time, I desired her husband, who was almost frantic, to assist me in raising up her head and shoulders from this supine position. She gradually resuscitated, and in three or four minutes she became quite revived. I again visited her late at night, when she said she had great pain in her arms, and she thought that her husband and I had grasped her arms too tightly. On returning home and reflecting on the circumstances of this case, I concluded that pressure (quite unintentional, however,) on the brachial arteries, by impeding the circulation and causing congestion, must have excited the action of the heart.

On making the experiment, I found, that by pressing the brachial artery, the pulse, though it gradually beat faster and faster, continued still small and thready, and when the pressure was removed, it became very full and continued so for some time.

I can at any time raise the pulse in this way. On repeated trials, I find that the pulse being first felt so as to ascertain the progress of the pressure, it runs nearly thus:—

In $3\frac{1}{2}$ minutes it rises from		68 to 74
5	- - -	68 to 78
7	- - -	68 to 80

So that in seven minutes, twelve beats in the minute can be gained. Is there any medicine known which can do this in so short a time? How valuable, then, is this fact!

It was only yesterday that an eminent anatomist called on me. He doubted the fact. I convinced him by stopping the circulation in his right arm, when in nine minutes his pulse rose fourteen beats in the minute. I measured his pulse, it was,—

75, and in $3\frac{1}{2}$ minutes it rose to		83
in 5	- -	85
in $8\frac{1}{2}$ or 9	-	90

As the laws in the animal system sometimes call in the act of pressure, I conclude that to imitate nature in that respect, and in other instances of disease, especially in such as proceed from great exhaustion, they may be (after the knowledge of this fact) successfully treated.

Before I conclude, I have only to say, that if the tourniquet was known formerly to be of use in disease, I can surely affirm it is not used at the present day, nor for the thirty-six years that I have been in practice in London, either at public hospitals or in private practice.

If the patient is thin and delicate, the force of the operator's thumb will be sufficient to produce the necessary pressure. But if the patient be more muscular, a tourniquet must be applied. It may be objected to by saying, "but where is a tourniquet to be had?" A simple and effectual one can be made of a neckcloth or pocket-handkerchief, and a bit of stick, a pencil-case, or the handle of a pocket-knife.

I have, on this occasion, pointed out the good effects to be derived from this practice, as regards a sudden stimulous to the heart when in cases of suspended animation; in cases of persons apparently dead from drowning and in syncope. But much is left to be said of its use in various other instances, where the sanguiferous system requires quick attention, and a remedy fortunately always at hand. —*Wardrop on Diseases of the Heart.*

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6. *Menstruation occurring in old age.*—In the *Med. Zeitung*, No. 48., 1836, a case is recorded of a female who menstruated at the advanced age of 83; and in the *Jahrbücher der in-und-ausländischen Medicin*, another of one who is menstruating at the age of 74. A medical friend informs us that a member of his family menstruated up to the period of her death, which was at the age of 80 years.

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7. *Superfœtation in the human species.*—The following case, considered by the relator as an example of superfœtation, has been communicated to the *Révue Médicale*, (March, 1838,) by Dr. Pertus.

Madame C——, the mother of several children, became pregnant in the month of June, 1837, and nothing remarkable occurred until the 20th of September, when, without any ascertainable cause, a slight discharge took place from the vagina, and continued for eight days, when it increased, and pains came on. Dr. P. was sent for, and on examining the clots of blood, found in them first a fœtus of three months, without its annexes, and next an entire ovum, on opening of which last he found in it a fœtus of not more than five weeks. The secondines of the first fœtus were discharged the following day.

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8. *Superfœtation in a Goat.*—This case was communicated to Dr. Pertus by Dr. Berjaud. A goat received the caresses of a ram the beginning of December, 1836, and was supposed to have been fœcundated. However, she continued to manifest a desire for the male, and she was gratified in this desire fifteen days after the first connexion. From this moment the animal appeared satisfied; she began to increase in size, and about the beginning of May she brought forth two young ones perfectly formed, but which soon perished, for the mother would not suckle them. Her abdomen continued large, and fifteen days subsequently, to the surprise of her keeper, she gave birth to three perfectly formed young,

to which she showed great eagerness to give her milk. These young lived three days.

It may be well to remind the reader that the term of gestation in the goat is five months, and the number of their young generally two, never more than three. —*Révue Médicale*, March, 1838.

MATERIA MEDICA AND GENERAL THERAPEUTICS.

9. *Researches on the Febrifuge Properties of the Chloride of the Oxide of Sodium.* By Dr. Gouzée.—The high price of the sulphate of quinine renders it very desirable that some other remedy, more attainable by all classes of society, should be discovered for the effectual treatment of intermittent fevers. In a memoir presented to the Academy of Sciences by Dr. Lalesque, in 1835, the chloride of soda was recommended as possessing medicinal properties as active as those of the sulphate of quinine, and as being fitted to serve as its substitute in all cases in which the quinine is indicated in periodic fevers. Dr. Gouzée gave, at first, but little credit to the value attached to the chloride, until it was further confirmed by the experience of a friend; but, to establish the efficacy of a new febrifuge remedy, various conditions are indispensable. It is not only necessary that the situation generally imparts to intermittent fevers that tenacity which prevents their yielding to all medicines: attention must also be paid to the particular case in which the experiment is made, to the season, to the medical constitution; which circumstances will alone, in certain circumstances, contribute powerfully to recovery. Thus, for example, it has just happened that at Antwerp, where the most favourable circumstances might appear to be combined for experimenting on this chloride, a number of fever patients have become spontaneously convalescent, shortly after their entrance into the hospital; having suddenly passed from a life of activity, and an abundant but not well selected diet, to circumstances of an opposite character. It is also very important to determine the quality of the medicine employed, as well as its exact mode of administration. In these matters too much exactness cannot be observed. The chloride of soda employed by Dr. Gouzée was recently prepared, marking twelve of the areometer, and decolorizing at least eight parts of the sulphate of indigo. The ordinary prescription has been half a drachm of the chloride in four ounces of distilled water. The patients have so taken this dose that the last quantity of it should be swallowed shortly before the occurrence of the paroxysm which it was wished to overcome; and, in order to isolate the patients as much as possible from all opposing influences, a very light diet only was allowed, and confinement either to the bed or chamber was enjoined.

Several cases are recorded, illustrative of the febrifuge action of the chloride of the oxide of sodium, and from them the following inferences appear to be fairly deducible:

1. The chloride of soda actually possesses febrifuge properties. 2. It is far from producing the certain and energetic effects of the sulphate of quinine. 3. It cannot, therefore, replace the sulphate of quinine in every case in which that salt is indicated in intermittent fevers; and it would be imprudent to hazard its employment in pernicious intermittents. 4. It is not irritant. 5. It may be had recourse to in recent intermittent fevers, disposed to yield, in individuals who are easily impressed, in women, in children; and it may, in general, be employed in all cases where there does not exist any danger. 6. The diminution of the intensity of the paroxysms during its use augurs favourably, but does not always announce an approaching cure. 7. It appears to exercise a favourable influence over engorgements of the spleen. 8. It remains a subject for further enquiry whether its dose and mode of administration may not be advantageously modified; if it may not be associated with other substances capable of rendering its action more energetic; if, lastly, in continuing its use, the frequency of relapse may not be diminished.—*B. and F. Med. Rev.* from *Revue Méd.*, Feb. 1836.

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10. *On the use of Stramonium in Neuralgia.* By G. G. Sigmomd, M. D.—In some of those neuralgic affections which I have had occasion to tell you occa-

sionally baffle every expectation of the physician, and in which we are obliged to change from one remedy to another, from the consciousness that we have not as yet precisely ascertained all the points connected with the disease, you will find this herb sometimes answer the end proposed. Dr. Begbie, who, in the year 1825, published in the "Edinburgh Medical and Chirurgical Transactions" the result of some experience, states that he considers the narcotic properties of this plant as decidedly superior, in some cases, to those of other medicines of that class, and he details instances illustrative of its sedative powers. In no case did he perceive any bad effect, with the exception of, in one instance, an unpleasant nervous sensation in the throat. You will find, from one of the periodicals, that Dr. Elliotson has given stramonium at *St. Thomas's Hospital;* in the year 1828 some reports of the cases appeared. He very successfully treated a neuralgic affection of a very severe character, by giving a grain of extract of stramonium an hour before the accession of the paroxysm, which was intermittent; on the third day the excruciating pain was mitigated, the dose was then increased one half, and in ten or twelve days the disease was cured. In another instance he combined mercury with stramonium, and when ptyalism was superinduced the pain ceased, and a cure was effected.—*Lancet.*

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11. *Smoking of Stramonium as a remedy for Asthma.* By G. G. Sigmond, M. D., &c.—The first legitimate introduction of the datura stramonium, as a remedy for asthma, and other pulmonary affections, is to be attributed to Dr. Sims, who very strongly recommended smoking the herb. It was in the year 1802, that General Gent, on his return from India, gave to that learned physician and accomplished botanist, a remedy which was used in the east as a specific for relieving the paroxysms of asthma, and told him that it was prepared from the roots of the wild, purple-flowered thorn-apple, the datura ferox. The roots, it appeared, were cut into slips, as soon as they were gathered; they were then exposed in the dry air, in the shade, until all moisture had completely evaporated; they were then beaten into fibres, very much resembling in appearance dry hemp. When the remedy was to be tried, these shreds were placed in the bulb of a pipe, either with or without tobacco, according as the individual had been previously accustomed to smoking or not, and then inhaled, after being kindled, in the usual form. This plan and mode of treatment had received the sanction of the highest medical authorities in India, and Dr. Anderson, physician-general at Madras, not only recommended it, but is said to have had recourse to it himself.

Dr. Sims, in one of the periodicals of that day, related a case in which he was induced to administer this remedy. The daughter of an eminent physician laboured under phthisis pulmonalis, combined with asthma, as it appeared to him, from the frequency of the paroxysms of difficulty of breathing, not usual in pure phthisis, at least in so early a stage of the disorder; with a view of alleviating these distressing paroxysms, he recommended a trial of the datura, as given to him by General Gent; the relief obtained was far beyond his expectation; and, although the lady gradually sank under the incurable disease, yet she continued to experience throughout its progress, even to the last, the greatest comfort from its use. He then recommended it to Mr. Toulmin, of Hackney, who had for several years suffered frequent paroxysms of asthma; he was much benefitted by it, and having exhausted all the stock given him by Dr. Sims, he determined, on the suggestion of the Doctor, to supply its place with the datura stramonium, which he found equally serviceable. * * * * Dr. Bree, in a letter published in 1811, states, that from the beginning of the year to the month of April, he had seen eighty-two patients who had smoked stramonium; those who had derived no permanent good effect were fifty-eight out of that number, the remaining twenty-four had been all of them more or less injured, and some of them destroyed, by the practice. Of the fifty-eight, eleven certainly were not in a state to try the remedy, and whether the others derived even temporary relief we are not told. He gives in the list of twenty-four, seven patients with phthisis, who evidently ascribe the natural course of the disease to the bad effects of the herb. He states an instance in which epilepsy occurred to a lady advanced in life, who had never before had any attack of the kind; he likewise adduces instances where the worst symptoms had rapidly supervened, but they were in constitutions highly debili-

tated, and in cases where the difficulty of breathing was the result of organic changes of the most important viscera, and where disease would, under any circumstances, have rapidly developed itself.

But an event occurred which naturally excited amongst the afflicted with this disease a very strong sensation, and overwhelmed with dismay the advocates of smoking stramonium. In the periodicals of the day will be found the remarkable history of the fate of a gentleman, deservedly esteemed and regarded, who, with a zeal highly praiseworthy, had materially assisted in the introduction of this, which he believed to be so valuable a remedy for an afflicting disorder. At that time, delicacy to the parties prevented the name of the individual, whose loss was much deplored, from appearing; but, as time has worn away the necessity for such a feeling, and as the case has become one almost of medical history, I may state to you, that the gentleman whose name I have mentioned to you as the person who had brought with him the datura from Madras, and had given it to Dr. Sims, is the unfortunate subject of my present narration.

Sir George Gibbs, a physician of high character and talent, was suddenly called on to attend this gentleman at Bath. He found him in a comatose state; he appeared stunned, and his resolution was impaired; his head was reclining on a sofa; the pulse was scarcely perceptible, and the carotid arteries had little or no pulsation. It appeared, on inquiry, that the gentleman had smoked stramonium on the previous evening, in consequence of his having been much affected with shortness of breath; he had then exhibited symptoms of stupor. He arose the next morning, in a heavy, comatose state; a large blister was applied to the back, purgatives were administered, and a draught of camphor and squills. On the second day, the blister and the purgatives had produced their wonted effect, and the mental faculties were somewhat recovered. On the third day his recollection was much better, his pulse was perceptible, and some return of shortness of breath had occurred. On the fourth day he suddenly expired after dinner, either whilst sleeping, or immediately after waking. Dr. Parry, who was the nearest physician, was, at the spur of the moment, as he lived close by, sent for; but he found him dead, upon his arrival. The patient was of a full habit; he had been affected, about twelve months before, with wheezing and cough, from which he recovered, under the care of Dr. Gibbs, by ordinary treatment. At the commencement of this last attack, he had, without any consultation with his medical adviser, smoked largely of stramonium three or four times. * * * * * *

In pure spasmodic asthma, during the paroxysm, stramonium may be smoked, where there is not the slightest tendency to apoplexy, epilepsy, or paralysis. Where dyspnœa is present, or constant difficulty of breathing, it is not to be recommended, nor where the embarrassment is the result of hydrothorax, or of diseased abdominal viscera. It is only to be pursued for a very short time, and the intervals between inspiration should be long; when the slightest giddiness comes on it must be immediately given up; the saliva should be swallowed. The patient should, if possible, avoid sleeping immediately after its use, and in preference should take moderate exercise.—*Ibid.*

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12. *Treatment where poisonous effects supervene during the smoking of Stramonium.* By G. G. Sigmond, M. D.—Should incoherent talking, flushed face, alteration of vision supervene during the smoking of stramonium, it should immediately be discontinued; nor should it be persevered in, if relief be not very speedily obtained, for, from the circumstances I have mentioned, the expected ease should be almost immediate. The fumes of the more decided narcotic, opium, inspired only once or twice, has as much influence as a grain of the drug. Should stupor, delirium, tremor, convulsions, and coma occur, you will find that affusion of cold water upon the head, or sprinkling it well with water, slightly acidulated, will be the best step to be taken for instantaneous relief, and then the administration, internally, of diffusible stimuli. One of the most striking means of restoring a patient under such circumstances, if the apparatus be at hand, is the injection of a lavement containing camphor, for no sooner is it introduced than it is found in the pulmonary transpiration, which you will immediately recognise by the odour of the expired air; the quantity used must be very small, for the stimulus to the system is very great. If a strong solution of camphor be injected into the rectum of an animal, the effect is very extraordinary; on some

occasions he has been seen to leap several feet from the ground, at others to be seized with convulsive movements of the mouth, and of the muscles of the face, and sometimes to make a retrograde movement of an extraordinary kind; at other times to run up and down as if in a rabid state. Ten grains of camphor is as much as should be employed. Dr. Edwards, of Paris, injected half a drachm; his patient, in a few minutes, felt a camphorous taste, and for twenty-four hours his breath exhaled a camphorous odour. He felt an indescribable uneasiness; he was anxious, without thinking himself in danger; he shed tears involuntarily. On going down stairs to get assistance, he was surprised to find that his body appeared so light that he seemed to skim along the floor without touching it. He began to stagger, his face became pale, he felt chilly, and was attacked with a sense of numbness in the scalp; a glass of wine was given him, and he gradually recovered, but for some time his mind was singularly affected.—*Ibid.*

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13. *Mode of action of Digitalis.* By G. G. Sigmond, M. D.—It is upon the heart and arterial system that digitalis acts; it decreases the irritability of the constitution, it diminishes the frequency of action of the heart, and hence the circulation through the system is so slow, that the kidneys have more time to take from the blood the watery portion which they excrete, for we have no reason to believe that those organs are stimulated to any increased action by the herb. The physiological reasoning upon the action of digitalis has been considered to be obscure, from its having been supposed that it diminished action in one instance, and excited it in another; but I should attribute the apparently newly-acquired energy of the kidneys, not to any stimulus imparted to them, but to their having a longer period to act upon the fluid which is detained in the renal vessels. Some authors have contended that digitalis is a powerful stimulant, that it produces flushed face, hot skin, restlessness, and all the symptoms of febrile action; and this you will find to be the case where, from a diseased state of the kidneys, the due separation of the fluid from the blood does not occur, or where, from pulmonary disease, the due transpiration does not take place; for the system of circulation is slowly carried on at first, but if no elimination from the blood occurs, the whole frame is thrown into disorder, and a febrile state is produced.

Some believe that digitalis only acts as an indirect sedative, and only when it accumulates in the system, and the experiments of Jörg, at Leipsic, are referred to; the herb was given to individuals in a state of health, in doses of a quarter of a grain of powder increased to three grains. It produced upon the alimentary canal marked effects, and this also occurred to Sandrart in his trials, when the digitalis was administered in powder; but I have before observed to you, that, in this form, it is liable to produce considerable irritation of the stomach: it likewise influenced the brain, a state resembling intoxication coming on. Upon the generative system its power was strongly marked, even to the excitement of seminal excretion in the male, and symptoms similar to the premonitory sensations which females experience at particular periods.

All these phenomena may depend upon the retardation, in the capillary vessels, of the blood; Dr. Mossman, in the year 1806, was the first who drew the conclusion, from its influence on the minute arteries, and the diminution of vascular action, that it was strictly a sedative; he went so far as to state that he could obviate pneumonic inflammation with as much certainty by it as he could arrest the progress of an intermittent fever by means of the bark of cinchona.—*Ibid.*

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14. *On the powers of the Digitalis in Dropsy.* By G. G. Sigmond, M. D.—There is no remedy to which, from its effects upon the urinary excretion, the name of diuretic is given, which more certainly, speedily, and effectually evacuates the hydropic fluid than this herb. You must, when you feel it right to employ it, be, however, upon your guard; never continue it too long, and always be very wary in attempting to increase your dose: it is not a remedy to be trifled with; it produces the most appalling effects where it has been injudiciously prescribed, and has been the fertile source of fatal sorrow to those who have indiscriminately recommended it, and to those who have followed bad advice. * * * *

With regard to the peculiar state of an individual who is labouring under effusion, you will find that digitalis will not only, generally speaking, be useless, but

occasionally injurious, when there is great natural strength and vigour, which have been unimpaired by the ravages of disease, where the muscular fibre is tense, the skin hard and dry, if the individual be inclined to corpulence, if the countenance be at all indicative of determination to the head, or venous retardation, or if the habit of the bowels be slow, and difficult to be called into action.

Dr. Withering first drew the distinction of the cases of hydropic effusion in which digitalis would be found unsuccessful, and, I believe, the great majority of medical men who have been in the habit of employing it, coincide with his view, and the experience of the most acute and intelligent practitioners has, on the other hand, satisfactorily demonstrated that there are states in which it is pre-eminently efficacious. In weak, delicate, irritable constitutions, where there may be present much laxity of fibre, a thin, soft, smooth, pale skin, which in the anasarcous limb seems to be transparent, when upon pressure by the finger on the surface there appears to be no elasticity whatever, but the impression sinks in deep, and there is no evident power of resistance; when the emaciation of the other parts of the body is very striking, where the countenance is pale, where there is feeble or intermitting pulse, when the constitution has been much broken down, more particularly if it were originally strong, sound, and robust, where any indulgence in spirituous liquors, bad habits of life, the action of mercury, or any debilitating cause, has produced the mischief,—in such states digitalis will be indicated in preference to most of the diuretics, of which I shall hereafter have to speak. You must remember, however, that it is merely the evacuation of the hydropic fluid that you will effect; but you have not advanced more than a step in the cure of disease, more particularly if that disease be connected with disordered state of the viscera, or if it be attended with paralysis. It, however, will do that which sometimes is of as much importance as any object you can have in view; it will alleviate the most distressing symptoms, and you will gain time, during which the system may be enabled to rally, and then sustain the impression of well directed energetic remedies. Many have been the contradictory statements made of the diuretic effects of digitalis, in consequence of the want of attention to these principles, which you will find to be of vital importance to you, and you will not fail in giving relief where you judiciously employ digitalis. You will frequently be astonished at the quickness with which the fluid is evacuated; but you must not be surprised at the rapid accumulation which may again take place, when you remember what I have told you, that you do not influence the disease which caused it. * * * * * * * * *

In hydrothorax arising from any obstacle to the circulation, such as hypertrophy of the heart, when it is the termination of long protracted diseases of the thorax, if they be not accompanied by disordered conditions of the valves of the heart, digitalis may be employed. In ascites, in anasarca, dependant upon disordered states of the exhalent vessels, which throw out a larger quantity of fluid than can be absorbed, you produce good effect by diminishing the impulse with which the blood is directed to the capillaries, and you present that fluid to the kidneys for a greater length of time, in consequence of which they can take up more to excrete than would otherwise be the case. In ovarian dropsy it seldom is found that digitalis succeeds; in hydrocephalus, in infancy, it is highly noxious. Few states of the system have had more diligent inquirers. Amongst them, Wells, Blackall, Parry, Abercrombie, Ayre, Yeats, Bostock, Bright, Golis, Cheyne, have most indefatigably laboured, and the analysis of the urinary fluid has been of late years looked to with the hope of obtaining a fresh source of information. Many prefer ample depletion before the exhibition of this remedy, but I think you will generally find that when you must lower the system previously, other diuretics will be more serviceable, and I would strongly urge upon your minds, as I think it a matter of deep importance, to avoid, if possible, the junction of these two means of cure. It is true that after venesection digitalis is more diuretic, but the most fatal effects have occurred from giving the herb, where blood-letting has taken place. To use an expression which I have somewhere seen,—"It kills the heart."

During the action of digitalis for the cure of dropsy, the recumbent position is preferable, for, from the experiments of Dr. Baildon, detailed in the "Edinburgh Medical Journal," for the year 1807, we learn that it decreases the action of the heart most when an individual is lying down. He observed in his own case, and

he repeated the experiment several times, that after digitalis had taken its effect, as long as he stood erect, his pulse, which was upwards of 100, had not lessened in frequency, when he sat down it became about 75, but when he lay upon his back, it fell very considerably, and became as low even as 40. Dr. Baildon found that the same effect was produced upon all those patients to whom he had thought it proper to administer the herb. This effect is one of the most astonishing facts in our history of this sedative; it is very singular that it has not excited more attention, and led to some decisive experiments. Although Dr. Baildon's trials of this interesting substance have been detailed by a vast number of authors, there does not seem to have been drawn from them that result which minute investigation would most probably afford to us in our practice.

There is almost always some degree of nausea, of languor, of uneasiness, of general irritability present, whenever digitalis is given; indeed it would almost appear to be necessary for its salutary influence to be produced, and Dr. Paris has a very judicious and a very practical remark upon this point, which I think will be fully borne out by all those who use it, that every attempt to prevent these unpleasant effects, or to correct the operation of digitalis, by combining it with aromatic or stimulant medicines, seems to be fatal to the diuretic powers of the remedy; he has likewise quoted Dr. Blackall, who objects, in some cases, to the union of mercury, digitalis, and squill; to the combination of the two latter, however, I do not think the same objections arise as to the first.—*Ibid.*

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15. *Effects from the excessive use of Digitalis.* By G. G. Sigmond, M. D.—In some individuals the miserable train of sensations that follow upon the employment of this remedy precludes the possibility of persevering in it even when we perceive that it has been successful; nausea, vomiting, excessive depression of spirits, and fainting, often prevent us from proceeding further with it, and as any attempt then to combine it with any drug that might be supposed to obviate its bad influence destroys its efficacy, we are obliged to abandon it altogether.

There is a point at which we can no longer administer digitalis; this is generally ascribed to its accumulation in the stomach, but it seems to be rather dependant upon the very low tone to which the vascular and muscular systems have been lowered, for neither by vomiting nor by purging has any portion of the digitalis been thrown off, and the same effects are visible if the endermic mode of acting upon the system have been pursued. It is generally at about the eighth dose that the baneful influence of the herb is visible, and this often happens whether the dose have been large or small, whether it have been diminished or increased, whether it have been given twice or three times in the course of the day; some curious examples are quoted by Sandrart in two papers which appeared in the "Bulletin Général de Thérapeutique," in the year 1833. They present some very extraordinary results from its continued use; his cases were principally diseases of the heart; out of fifty-seven, thirty-one had maladies of that organ, thirteen being hypertrophy without dilatation, eight hypertrophy with dilatation, and eight dilatation without hypertrophy; they fully bear out the great necessity of caution which the wisest and most experienced men of our own country have so strongly inculcated; he seems, with Dr. Halloran, Dr. Hamilton, and others, to consider it as a narcotic, first stimulating, and afterwards acting as a sedative. When the poisonous effects are produced after the symptoms of disturbance of the alimentary canal (indicated by the vomiting and purging, then vertigo, drowsiness, and frequent faintings) come on, the skin is bedewed with a cold sweat, the tongue and lips swell, profuse salivation occurs, sometimes the action of the kidneys is totally suspended, at others it is increased, with frequent desire to expel the urine, or at others inability to retain it is felt; the pulse intermits and is slow, and delirium, hiccoughs, cold sweats, confused vision, sometimes convulsions and frequent faintings follow, till death closes the scene.—*Ibid.*

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16. *On the use of Digitalis in Phthisis.* By G. G. Sigmond, M. D.—It is only in the early stages of phthisis that digitalis can be ranked as a curative agent, but it may, in its later moments, be equally important as a palliative. The high character it has obtained, has been from its having been employed before the breaking down of tubercles in the lungs; but upon a careful review of those cases which are contained in our periodical literature, as well as from an inquiry into

the opinions of the most enlightened men of our profession, and from the quantity of experience which the practice I have myself seen has afforded me, I am convinced that when actual disorganization has occurred, no remedy that we have as yet discovered will lead to the eradication of the disease. * * *

As those who have most studied the history of consumption concur in the opinion of the insufficiency of our power over tubercular phthisis, it becomes the more imperative on us to be familiar with the premonitory symptoms, for then we can ward off the threatening danger. The golden maxim, "venienti occurrite morbo," is no where so rigidly to be enforced as where suspicion is excited that the system is predisposed to this melancholy disease, which is more than usually striking from its selection of the most interesting victims, at a period when our sympathy is most excited in their favour. There are some who "lay the flattering unction to their souls," that they have cured the true, genuine, pulmonic phthisis, where tubercles have been fully developed, where their structure has been broken down, and have poured forth the purulent discharge. I assure you they have been deceived. There are instances, nor are they very uncommon, where even fever, attended with copious expectoration of viscid mucus, has worn the fatal appearance, and where it has been stated that the individual is in a rapid consumption—one of those false terms which mislead. Hectic fever has been present, attended with morning and evening exacerbations, night sweats, wheezing cough; chlorosis has likewise borne somewhat similar appearances; there may be harassing cough, pain in the chest, or side, rigors, succeeded by great heat, and not unfrequently night sweats. These states have yielded to appropriate treatment, and the medical man has believed that they were consumptive cases, and I could point out to you several instances of such histories being detailed. Dr. Maclean has very forcibly and practically illustrated these points in his observations on the digitalis purpurea.

In the coming on of consumption there is one great, and never-to-be mistaken symptom, the state of the pulse, which too often escapes observation, but which reveals more than does the cough, the loss of strength, the emaciation of the body. It is singular that this, the pathognomonic symptom, which is peculiar to pulmonary affection, so often passes unheeded, that many of our best writers merely mention its quickness, and that, in the present day, some of those authors on diseases of the chest, who will hereafter be ranked among our classic medical authorities, devote so little attention to a diagnostic mark of such value,—one which, in my mind, is of fully as deep importance as the signs that are conveyed to the sense of hearing by the stethescope or by percussion. It has been generally acknowledged that certain individuals are incapable of the nice tact of distinguishing disease by the pulse. That there are many shades of distinction which can be perceived by but few, I have little doubt; but I think that the principal obstacle we have to encounter is the conveying to others the sensations which are excited in our own mind. The indication of consumptive tendency by the pulse is much more easily recognised than it is explained to another, and in consultation with more than one experienced individual I have heard the same remark. I think you will find that the peculiar rapidity of circulation exhibited in the pulse indicates an extraordinary state of irritability of the living fibre; it is not that which is attendant upon fever, it has neither the strength nor the hardness of the inflammatory, nor has it the weakness nor the smallness which belongs to low fever, and in both of which states there may be increased celerity of the pulse; there is tension, but it is not the whipcord feel of inflammation; there is a vibration, but it is essentially distinct from that which betokens disease of the heart; it is extraordinarily dependant upon mental emotion, and its rapidity is excited by moral causes in a most surprising and unaccountable manner. * * *

There is no state of incipient consumption in which digitalis, properly administered, is of such infinite importance as when this disease first arrests our suspicion as being likely to occur in the young female, in whom, at the age of puberty, nature exerts herself, with unerring precision, for the full developement of that system upon which the increase of our species depends. These efforts of nature are almost invariably successful, and the greater number of females are, after a short interval, prepared to fulfil the destiny for which, as a sex, they were ordained. It is at this moment, however fair may be the external form, that that form is most fragile. Nothing can be more exquisite in nature's works, than

that which she has taught us most to admire and esteem,—a woman in the full possession of her bodily attraction and her mental charms. Probably one of the most enchanting delineations that ever was drawn, is to be found in the "Conspectus Medicinæ Theoreticæ" of my revered preceptor, Dr. Gregory, of Edinburgh. He has, in classic language which Cicero or Tacitus would have admired, painted woman such as she is when the full developement of her system is announced by her external appearance. But how soon is that superabundance of health exchanged for suffering and for sorrow, if the purposes for which she was created cannot be carried into effect,—if that quantity of nutrition, which is not only intended for herself but for her offspring, be not carried off by the channels which nature has prepared. Every thing now proves that the circulation is in a state of easy acceleration. In an instant the heart quickens with an unnatural throb; the face is quickly flushed, the mind, like the body, is in an electric state; every chord is tremblingly alive to the touch; its tension is irresistibly strong; every vibration is conveyed along the whole frame; the pulse quickly shows the mental emotion; the cheeks are crimsoned with its modest glow, or are deeply suffused; the eyes radiate the light of love, sparkle with the illumination of genius, or beam with the fondest and truest affection; there is a gentle warmth, and all that can betoken the highest health gives hope and expectation of joy and life. There is now a great determination to the thorax, but more particularly, externally, to the glands which are destined to secrete the future nutrition of the offspring; they are fully charged with blood, from which the milky fluid is to be secreted. Exposure to cold is sufficient to determine the blood to the internal membrane; hence young women have inflammation of the thoracic contents even from personal exposure, owing to a bad fashion of dress; but these inflammations yield much more readily to external counter-irritants, such as blisters, than they do in men, in consequence of more ready determination of the capillary vessels to the external surface than to the internal; but these frequent slight colds call into action any predisposition to disease of lungs which may exist; and where, at first, the membranes only were diseased, the lungs become solid, ulcerated, or changed in their structure.

Every thing tends, at this eventful moment of life, to increase the circulation; yet there seems a wonderful adaptation of means to carry it on without endangering the functions of the various organs; congestions do not occur, but the tendency is to fill every minute capillary vessel, which again quickly unloads itself. It is not only the arterial system that is thus replete, but the venous system partakes of the fulness: you observe the white coat of the eye sometimes exhibit a most beautiful hue, there is an exquisite tint of blue which gives to the pearly membrane a shade that has something of heaven in it, something so supernatural, that Byron's line, "that eye was in itself a soul," appears not only poetic but descriptive; this depends upon the minutest venous channels of this coat being charged with the blue-coloured blood which circulates in the venous system. At no other period of life is this visible. Sometimes the heart labours with the fluid that is transmitted through it, the slightest exertion produces palpitation, and you will find young females constantly liable to this state, which has been mistaken for organic disease. Indeed, I myself have known instances where the adroit stethescopist has pronounced an affection of the heart where there was only this state peculiar to the age and sex. You will hear it often remarked, that females have lived for years after it has been formally announced that there is organic alteration of this great centre of life. In such cases small quantities of the tincture of digitalis only occasionally exhibited, beginning with five drops, will act most beneficially, and, if combined with an equal quantity of tincture of opium, will, in those high states of nervous excitement to which young ladies are sometimes subject, prove much more useful than the aromatic spirits of ammonia, the camphor, the hartshorn, which momentarily stimulate. This is a useful combination on very particular and urgent occasions, but it is by no means to be frequently had recourse to; it is only when necessity demands it that digitalis is to be used. In consequence of the acceleration through the lungs, the minutest vessel becomes full of blood; each capillary is surcharged; not only the pulmonary vessels are in this state, but the investing pleura is absolutely injected with fluid; still there is not inflammation unless some exciting cause occurs; if cold constricts the extreme ends of the vessels, this takes place, and the thoughtless

imprudence of youth too often exposes the delicate system to the dangers that are consequent upon it. A cold, variable climate should at this time be avoided, and the diet must not be too stimulating; every thing that can carry off the accumulated irritability of the system must be administered. It is to be remembered, that in the majority of cases phthisis does not occur, as many writers (very judicious on other points) have stated, when puberty arrives, and the system is to be placed in its new state, but it is after that time, for nature is generally successful in the accomplishment of the change, however much it may be retarded, and if she be not, the disease that is produced is not wasting of the lungs, but of the body generally. In the state to which I have drawn your attention, there has been demanded another channel to carry off the nutrition in which some precocious individuals is prepared at a very early period, and all their functions are carried on with a vigour which is too great for their feeble habits. Should the proper circumstances not arise, and consumption not occur, various other morbid conditions quickly present themselves.

The uterine system first betrays the constitutional disturbance, by headache, pain in the loins and the back, heat of skin, quick hard pulse, sometimes great tenderness of the abdomen, which would almost indicate the necessity of abstraction of blood, but for which the tincture of digitalis, combined with opium, or with tincture of iron, according to circumstances, will be most efficacious. Medical interference, in all these cases, must be most carefully limited, for upon judgment must depend the future happiness of some of the most interesting subjects of our skill. How often do we see disorders of that period yield spontaneously. In some cases you will find young females, at this eventful moment of their existence, complain of the most severe suffering in the very lower region of the back; this is mistaken, probably, for disease of the spine; the unfortunate victim is sometimes condemned for months to a reclining posture; is tortured in every way that honest but mistaken zeal and ingenuity can suggest; and, to use the favourite expression, "everything has been tried," when probably, to the astonishment of the uninitiated, some emotion of the mind kindles a new train of thought; she awakes as from a slumber and from a dream of harassment, and, in the figurative but descriptive language of the east, "She takes up her bed and walks." As the young lady has probably had the advice of "all the first men in London," who, knowing the real state and cause, have not been able to effect a cure, but, most probably, have told, in as delicate a manner as possible, the truth, she has had, as her last doctor, some shrewd bold man, well acquainted with the world, who has, whilst his pockets have been lined with fees, led on her friends, by exiting their hopes, and making their credulity subservient to his views. The case is related as a wonder, and the *natural result* proclaimed to be a great *cure* performed by a marvellous learned man. It is the frequent result of our present state of society, that many females must be disappointed, and incapable of fulfilling the general destiny, and that to some it must be pregnant with mischief; it is for you, as philosophers and consolers of the human race, to obviate, as far as you can, the unavoidable sorrow that may grow out of it to individuals. We cannot, from any unfortunate examples, conclude that our moral system is bad; I believe it to be the best for our social condition; for "when the women are chaste the men will be brave."

I would have you, whenever the care of families is committed to you, regard each member of it as your personal friend, and though you may be liable to the caprices of individuals, you will eventually gain esteem and regard. I think you should look with parental solicitude to your youthful patients at the time of which I have spoken; remember there is a general susceptibility to extraordinary vascular action, but not to inflammation; there is an unwonted but not altogether unnatural condition of the blood-vessels, which is necessary for the performance of peculiar functions. You may arrest undue action by digitalis, administered occasionally in the form of tincture, but it is not to be persevered in, and long intervals are to be allowed to pass between each period of prescribing it.

In proportion to the early exhibition of the foxglove in pulmonary disease, will be the success that you may expect from it. When the duration of what was supposed to be a slight cold is longer than ordinary, when the cough appears to be aggravated on going to bed, when the pulse is at different times in the day more than usually quick, when a slight difficulty of breathing is perceptible in a

horizontal position, when the heart beats violently on going up or down stairs, and we observe the individual to be of a delicate habit, and under twenty years of age, we must watch with great tenderness and anxiety, lest symptoms of a more aggravated character supervene, nor is it then too early to give from ten to fifteen drops of the tincture of digitalis, three times a day for three successive days, and then to wait, or gradually to diminish the dose; if there be chlorotic symptoms in the female, for they not unfrequently are developed at the same time, the tincture of the muriate of iron, now called tinctura ferri sesqui chloridi, may be administered, or the mistura ferri composita; these preparations will have their efficacy much improved by the digitalis, and their doses should be smaller in proportion. Indeed, the tincture of iron is more serviceable in small doses largely diluted in water, than in large doses in a small quantity of fluid; this rule holds good in many of the salts, which have their powers very much increased by their being held in solution in much larger quantities of fluid than in this country we are in the habit of prescribing.

Digitalis should often be discontinued, sometimes at once, at others by degrees, and then again had recourse to; but even the very gradual increase of the dose is most cautiously to be watched: if giddiness, pain in the head, throbbing at the forehead, or in the orbits; if there be unwonted vision, such as ocular spectra, a cloud interposing between objects usually clear; if small spots appear to be waving in the air, if nausea be present, it must immediately be abandoned, and may again be tried; but if your patient complains "of a faintness or sickness at the stomach as if their life was going from them," an expression which, even at the time of Dr. Maclean, was observed to be the most striking effect, when an individual is under its full influence, and almost all complain of it nearly in the same way, you must give up the remedy. On some individuals it acts as a soporific; it disturbs the intellectual faculties, and scarcely any person whilst under its influence, is capable of going through the ordinary routine of occupation. Some stomachs are very much alive to it, and twenty drops will produce nausea, a larger quantity will cause an inclination to syncope, and this is sometimes one of its most distressing effects, the swooning continuing long, and being often repeated, the languor too is very overpowering, whilst cold clammy sweats burst forth.

The urinary secretion often exhibits some very striking changes under the administration of digitalis. When it has been very high coloured, has had a thick deposit, and has been scanty in quantity, it has obtained a more natural colour and consistency, and has been increased in quantity. Some men, bolder than others, have continued its use, even when vomiting has taken place, and they think that the viscid mucus that has been thrown up, has relieved the chest, but surely under such an impression the milder emetics should be preferred. The effect upon the appetite in the intervals of nausea is sometimes very remarkable; the desire and craving for food, when there was previously distaste, are very striking.

The circumstance to which your attention is more particularly to be directed, is the agency of the remedy upon the pulse. You will most generally find two results, either a marked reduction in its frequency, or, on the other hand, an extreme irregularity. Instead of a quick, irritable pulse, betokening the state of excitement of the vascular system, there will speedily be produced a slow, steady, uniform pulsation, occasionally it will seem to be fuller than before, but the slightest bodily movement will counteract its influence, and, in most instances, very little exercise will accelerate it. If it fall below the standard of fifty beats in the minute, you will most generally find that the head and the stomach exhibit some signs of distress, but this is much more observable in phthisis than in dropsy, in which latter disease the excitability of the whole system is very much less. If irregularity of pulse be the *sequela*, it is marked by a few pulsations being performed with exceeding rapidity, and then a return to the previous condition and rhythm; but, occasionally, a complete stroke is intermitted. In asthmatic affections, in dyspnœa, it is very serviceable, whether they be dependant upon chronic or active affections of the lungs; but it will not control or cure the disease effectually, and, in most states of disease in those organs, it will alleviate the more formidable symptoms, and aid in prolonging life, and in rendering the last hours of life more endurable.—*Ibid.*

17. *Use of Digitalis in the affections of the Uterine System, which usher in and accompany Phthisis.* By G. G. Sigmond, M. D.—Digitalis is highly serviceable in these affections, and, indeed, its influence upon the periodical evacuation, renders it a most valuable emmenagogue when properly employed, namely, in those states which are marked by acceleration of the pulse, and a morbid tension of the vascular system. It is observed, that most of the young females who go out to India, although they have been remarkably healthy with respect to the periodic evacuation, rarely, if ever, perform that function more than once during the whole of the voyage, however long it may be protracted; and on their arival they generally have to encounter a train of morbid sensations consequent upon the effort of nature to resume her wonted condition. Most of the symptoms would be considered inflammatory; but it is merely constitutional excitement, the result of the disturbance the system has undergone, and the energies which the vis medicatrix naturæ is exerting to recover her lost balance. In such a state, digitalis is to be employed. If undue bleeding take place, it only protracts, to a very late period, the re-establishment of the menstruation, and there is a severe struggle, marked by a morbid condition of the membrane lining the uterus; and there is sometimes formed a false, or adventitious membrane, which is with great difficulty detached and dislodged, occasioning very considerable pain; besides which, so long as it remains within the womb, it forms a mechanical obstruction, irritating its vessels and its mouth. This membrane is large enough to cover the top of the finger, and corresponds in shape with the fundus uteri.—*Ibid.*

18. *Power of Conium as a Narcotic.* By G. G. Sigmond, M. D.—The power of conium as a narcotic and sedative, approaches much nearer to opium than do the other medicines of the class which has been the subject of my lectures, and it is upon the nervous system that its agency is more particularly to be observed. It lulls pain with considerable rapidity, when occurring in some of the most sensitive parts; it does not so completely induce sopor as does the juice of the poppy. The state in which an individual under its influence appears, approximates more nearly to stupefaction, from which there is some difficulty of completely arousing him, and this is occasionally attended by tremors. In very many cases of acute suffering it has been found to enjoy the power of palliating and of essentially relieving, and it can be given with great safety in many of those diseases in which opium, belladonna, and hyoscyamus are acknowledged to be useful. It may be administered in combination with them, or it may be substituted for them, when they have lost their influence. As a specific in any one complaint, I do not believe that it is to be trusted.—*Ibid.*

19. *On the power of Hemlock in Cancer.* By G. G. Sigmond, M. D.—Although the great encomiums which it has received in cancer are not altogether undeserved, it by no means has fulfilled the high expectations which the recommendations of Baron Stoerck had excited. It certainly is true, that in many of those painful sores which have been called malignant, and which approximate to cancerous ulceration, soon after its administration the acute agony is very much mitigated, that the discharge assumes a less virulent appearance, and that even the external character of the ulcer wears a somewhat different aspect, and that it is even possible to maintain, "with other appliances to boot," this amendment for some short space of time; even delusive hopes of ultimate recovery have been inspired: the fallacy, however, of sanguine views at last becomes exhibited, for, after this suspense of action, the disease again advances, and, though its rapid strides may be prevented, it ultimately proves the inefficacy of hemlock as a decided curative agent, though it may be acknowledged to be a palliative. Most of the surgeons who have adorned the science of this country, have devoted considerable attention to carcinoma, and all acknowledge how many points of difficult explanation invest the subject: it is a source of the most anxious investigation, for not only must diseases be accurately distinguished one from the other, but there must be a conscientious feeling of the necessity of judging when the knife is to be employed, and when the fearful and painful operation is to be avoided. The physician who knows the truth of Hunter's observation, that "the necessity for operation is, in truth, the defect of surgery," is called upon to discover what are the means

by which excision may be rendered unnecessary, pain alleviated, life rendered less burthensome, and its days protracted to the utmost span.

In the earlier stages of cancer, in that state in which scirrhus only exists, the pain is alleviated by hemlock; it is at first, however, so transient, as scarcely to require any anodyne, but at that stage in which a change is about to occur, which is denoted by the skin wearing a dusky or livid red, with an appearance of a shining tension, the suffering becomes more decided; instead of a shooting pain, occasionally felt, it becomes distinct and frequent, like the darting of a sharp instrument, or, as it has been termed, lancinating, and there is a sense of heat or of burning. In this state great relief is afforded by narcotics generally, and particularly by hemlock, which appears to reduce, in a singular manner, the acute sensibility of the system: it likewise seems to retard the moment when the tissues become infiltrated with serous, gelatinous, bloody, or purulent fluids.

In the various indurations of the mammary glands which excite suspicion as to their ultimate tendency, from their occurrence at a particular period of life, it is in your power, by cautious watchfulness, by enforcing the strictest regularity of diet, and by the exhibition of appropriate remedies, to ward off, for a great number of years, and, indeed, sometimes to suspend, during life, any further developement of diseased action; and although you cannot expect in every instance to be enabled to carry into effect this most desirable object, you will, in a great number of cases, succeed in checking the advance of the malady, in mitigating the severity of the pain, and in palliating the worst features that present themselves to you. Age has, it must be remembered, a very considerable influence upon the developement of carcinomatous tumours, and they will run with much greater quickness through their sad career, in a female at the age of forty-five, than they will when they attack a woman who is sixty years of age; they will at that, or at a later period of life, remain for years without any advance, continuing perfectly stationary to the last hour. In such cases exposure of the part to atmospheric influence must be prevented by the application of belladonna plaster, or of hemlock, and these, alternated, sometimes are more influential than when kept constantly employed, or, at any rate, the patient believes so.

In that carcinoma which, in the female breast, begins from a very small spot, and radiates from thence as from a central point, in different directions, and which, as the progress of the disease advances, exhibits itself in firm white bands, like thickened and compact cellular substance, which may be easily traced through the fat, you may, for a very considerable length of time, keep the disease in abeyance, and allay the general constitutional irritation, by the application, externally, of conium, and also by its occasional internal administration; and to this has been added the watery diet, as a further prophylactic means, advised by M. Pouteau, and carried into effect by John Pearson.

Although there may be some opinions to the contrary, and though these opinions have been asserted by some distinguished physicians and surgeons, I think you will find that the general impression is, that cancer of the mamma is not to be considered as a local alteration of structure, but as a proof of a general diathesis, and that by the removal of the local lesion, we not only do nothing but remove merely the symptom of the general disorder, but frequently cause greater danger, and sometimes accelerate a fatal termination; even those who believe that scirrhus is a local disease, acknowledge that there is a point at which it contaminates the system. Thus, Sir Everard Home thinks that no cancerous disease was ever so in its origin, but that when parts have been long in a diseased state, there is no security against their not ultimately taking on a cancerous action. Mr. Travers believes that the system is not contaminated till the scirrhous tumour begins to ulcerate in its centre, and that the matter of the poison is generated, not by the action which forms the tubercle, but by the series of actions instituted to destroy and remove it. The object which I have to impress upon your mind is the duty of examining the therapeutic agents which we possess, which may prevent the necessity of the performance of an operation which, from the earliest annals of our art to the present moment, has been pronounced not only to be dangerous, but to hasten the termination of human life. The language of Hippocrates on this subject is very striking, and I will show you that after a lapse of two thousand years, his descendants come nearly to the same conclusion as he had formed, and had expressed to his contemporaries. He says,

"It is better not to cure all latent cancers, for those who have been cured die quickly; those who are not cured may last a longer time. * * * *

In combination with iron, hemlock has been found very serviceable, it was first suggested by Justamond, and Mr. Carmichael, of Dublin, whose essay on the effects of carbonate, and other preparations, of iron upon cancer, contains some very valuable knowledge; he tried it, and, in some cases, the union was attended with evident benefit. In one case the iron produced no amendment until it was united with the extract, and the relief was immediate and permanent.

When the skin covering the immediate scirrhus is no longer moveable, in consequence of the adhesions that have been contracted,—when it becomes altered in its colour, is reddish, or has a darkened hue, is in an irritable state, softens, and ulcerates in one or more points which, at a subsequent period, unite in one ulcer,—when the mass beneath undergoes a very remarkable change, is traversed by numerous blood-vessels, loses its former hardness, becomes infiltrated with secretions, the result of morbid action, and the general appearance indicates that the structure of the parts has undergone a considerable change—it is right, at this stage of the disease, at first, to suspend, for a time, the administration of hemlock, and to have recourse to those means which give strength to the general frame, and to soothe and tranquillize the nervous system, without, if possible, the use of narcotics, for the constitution is otherwise so habituated to them, that, in the last stage, in which they ought to prove of essential value, they are too often inert, and fail to give that alleviation of pain, without which the last hours of the unfortunate patient are rendered most miserable.

At this particular period of the progress of the disease, it is, that the preparations of iron afford so much aid, and, whilst they strengthen the health, appear to possess some power over the incipient ulceration, giving it a more healthy aspect, checking its progress, and even, it has been asserted, curing the disease.

The sole benefit which could be derived from the hemlock is from its allaying pain, and rendering the nervous system obtuse, and patients have been kept almost in a state of stupefaction, which, at last, has ended in the loss of reason, or of memory. The great art, at this stage of the complaint, is to palliate by all the soothing applications, and by avoiding every injudicious stimulus, remembering the golden maxim, that when you can do no good, you must do no harm.

In the last sad stage of cancer, hemlock, if it has not been so injudiciously employed as to have no longer any efficacy, becomes the chief support and the best friend of the sufferer; it is preferable to opium: it is true it does not produce any of the agreeable influence of the latter drug, but it is fully as quick, and much more permanent, in its sedative and anodyne virtue, and it does not require to be so frequently had recourse to. Heberden first told us, in the last stage, besides the usual distress of fever, the hectic patient is often harassed with pains like those of the rheumatism, which wander throughout the whole body, or remain constant and fixed in one part, and, what is rather strange, often at a great distance from the primary malady, and, in appearance, unconnected with it; he observes, that these pains have been so great as to make no small part of the patient's sufferings, and not to be tolerable without the assistance of opium. These pains, at a very distant part of the body from the seat of the cancer, are found principally where the ulceration exists in parts that are exposed to the action of the air, and are frequently met with even where the disease is developed upon the lips, or upon the glans penis, hemlock, in such states, is invaluable, and, indeed, is the sheet-anchor of the medical man in the last moments.—*Ibid.*

SPECIAL PATHOLOGY AND SPECIAL THERAPEUTICS.

20. *On Aortitis, as one of the causes of Angina Pectoris; with Observations on its Nature and Treatment.* The *Dublin Medical Journal*, for Nov. last contains an article on this subject by Dr. D. J. Corrigan. As our copy of that Journal has not yet reached us we take the following analysis of the article from our cotemporary the *B. and F. Med. Review.*

This is a valuable contribution to the pathology of the diseases of the heart and great vessels, and throws some valuable light on that complex and occasionally

obscure affection, angina pectoris. The object of the paper is, "1st, to shew that *inflammation of the lining membrane of the mouth of the aorta* is capable of producing the group of symptoms to which we give the name of angina pectoris, and is therefore entitled to a place in the list of the causes of that formidable affection; 2ndly, to trace the pathology and treatment of aortitis." With these views, he relates three series of cases, first, "cases in which the patient died, while the disease was acute or recent; then those cases of longer duration, which exhibit the alterations of structure produced by the disease, when uncontrolled in its progress; and, lastly, those cases in which, from analogy with the symptoms of the former cases, there was every reason to suppose the existence of the disease, and in which treatment founded on the supposition was attended with success."

The first class contains two dissections, from Portal and Bouillaud, of patients dying suddenly from attacks of suffocative dyspnœa and palpitation, in whose bodies dissection shewed evident signs of recent inflammation at the origin of the aorta; and two cases observed by the author. The following is one of them.

Glynn, æt. 44, "had been complaining, for three months previously, of debility and cough, accompanied with attacks of dyspnœa, attacking him when walking or working, and obliging him to stop frequently to sit down. He also suffered acutely from sensations as if of tearing asunder in his chest. After exercise, he suffered from palpitation.

"Physical examination of the chest gave extensive dulness over the præcordial region, with tumultuous and indistinct action of the heart, and puerile respiration in the lungs, but no other sign of disease. On the 24th, five days after admission, head symptoms set in,—viz. dry retching, followed by delirium and stupor; and he died on the 26th.

"*P. M.* There was some fluid in the pericardium; the whole heart was enlarged, the left ventricle and auricle particularly so. The lining membrane of the aorta, just above the valves, was of a vivid red colour, and was protruded considerably beyond the natural level by an effusion of red and (apparently) organized lymph. which lay behind it, effused between it and the fibrous coat of the vessel. This vividly red and swollen portion of the vessel contrasted strongly with the pale and polished surface of the artery a little further on."

There is only one case of the second class, which exhibited during life the symptoms of disease of the heart and angina pectoris. "On dissection, the semilunar valves of the aorta were found perforated, and cartilaginous, and the lining membrane of the aorta, from the mouth of the vessel to its arch, contained underneath it innumerable atheromatous depositions."

The third class contains two cases, supposed to be examples of inflammation of the aorta, and cured by treatment administered with this view. The following is one of them:

"In February, 1835, Mr. D. passed through a very severe attack of acute rheumatism, and in the course of it was frequently seized by what were supposed to be fits of spasmodic dyspnœa. I saw him in his convalescence. He was suffering little from articular pains, but there was very strong action of the heart, with indistinct bruit de soufflet; and exercise brought on severe palpitations. I warned him of his danger, but in vain. He was so impressed with the conviction of his heart symptoms being nervous, that no persuasion could induce him to submit to treatment conducted on any other supposition. In eighteen months afterwards he came to town to consult me: his lips were livid and his feet œdematous, and he was suffering from severe and frequent paroxysms of dyspnœa. He dreaded to lie down, and the fits of palpitation and dyspnœa were brought on by any exercise, but more particularly by attempting to walk up an ascent. The abdominal organs were sound. The chest sounded well on percussion; and the respiration was in every part natural, or somewhat puerile. The pulsation of the heart was felt over a large space with strong impulse, and there was very slight bruit de soufflet in the præcordial region; pulse was about eighty-five, and small. These were the symptoms on the 4th of August, 1836. Leeches were applied over the region of the heart, and ten grains of hyd. c. magnesia given three times a day; while abstinence from wine and from stimulant antispasmodics was strictly enjoined. A seton was inserted before the left mamma.

"In four days the mouth was made sore, and the change in his state was as gratifying as it was rapid. The breathing became easy, the fits of dyspnœa

ceased, and he slept without disturbance and without dread in the recumbent posture.

"On the 22nd, I again made his mouth sore. He then returned home, and has never had any return of his former distressing symptoms. While these sheets are going through the press, (October, 1837,) I have again had an opportunity of seeing him. He is in perfectly good health, after having undergone the exciting and arduous exertions attendant on taking an active part in two of the most violently contested elections in the kingdom."

The other case was treated in a similar manner.

The following conclusions are deduced by Dr. Corrigan from the review of the premises:

"1st. That, in some cases of what are called angina pectoris, the paroxysms of dyspnœa, anxiety, mental distress, &c., constituting a fit of angina pectoris, and often supposed to be merely nervous, are really the symptoms of aortitis, or inflammation of the mouth of the aorta.

"2nd. That the treatment, in such cases, is the adoption of local bleeding, counter-irritation, and the exhibition of mercury, which experience has taught us are the means best calculated to prevent the effusion or cause the absorption of lymph.

"3d. The pathology of the disease, which these cases have enabled us to trace, encourages us also to put into requisition our treatment, and to persevere in it after even a considerable lapse of time has passed by, in instances too where, without this knowledge, we should have looked upon the case in despair, from the belief that irremediable organic disease had been established."

These observations are highly important in a practical point of view, and deserve attention. We believe that many cases of affections of the heart and large vessels are lost, from the false conviction of their hopelessness entertained by practitioners. On the whole, we think Dr. Corrigan has made out his case; although the co-existence of disease of the heart, along with that of the aorta, in some of his cases, renders the conclusion, that the aortitis was the cause of the angina, not quite logical.

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21. *Dysmenorrhœa relieved by Carbonic Acid Gas.*—Every physician is aware that some females suffer most severe pains in the uterine region, for one or more days before each appearance, and not unfrequently also during the continuance of the catamenial flow. Young girls residing in large towns are perhaps more subject to this distress than any other females;—their systems being often unusually irritable, and this excess of irritability being very generally associated with constitutional weakness. It is a common remark that such girls menstruate earlier in life than such as are robust, and those who reside in the country. Under these circumstances, marriage will often aggravate the dysmenorrhœa;—the generative organs being apt to be so highly excited by coition, that the accustomed monthly discharge, intended, no doubt by Nature as a means of local relief, is either stopped altogether, or is only very sparing and uncertain. The treatment of such cases is often extremely difficult. The employment of the ordinary emmenagogues is very generally pernicious; and even the application of leeches to the feet, or to the vulva, will sometimes only aggravate the sufferings. Professor Mojon, of Geneva, assures us that he has used injections of carbonic acid gas per vaginam, with the most soothing effects. Like Rasori and Borda, he considers this gas as a powerfully depressing or contra-stimulant agent; and it was by reasoning from its known effects, as such, that he was led to try its effects as a local application to the womb in painful dysmenorrhœa. The gas is easily obtained by pouring diluted sulphuric acid on some pieces of chalk into a flask, (which ought to be provided with a double orifice,) like an inhaling apparatus;—a curved flexible tube is fitted on to one of these, and when the gas is freely disengaged, the extremity of the tube is to be introduced into the vagina, and the fumigation is to be continued for five or six minutes. This remedy may be used two or three times in the course of the day.

M. Mojon assures us that he has employed this mode of treatment in a great number of cases, and very generally with decided advantage. Not only was the pain almost always relieved for the time, but also the menstrual flow, in future,

became more regular in its return, and more copious in its quantity.—*Med. Chirurg. Rev.* from *Bull. Gen. de Therapeutique.*

22. *Rheumatism cured by Vapour Bath of Camphor Fumes.*—A labouring man, 22 years of age, had long suffered from attacks of flying rheumatism; but, as the pains were not severe, he neglected to use any remedial means.

Exposure to wet and cold brought on a smart attack of the disease in its acute form; and for this he had to undergo a vigorous antiphlogistic treatment by general and local bleedings, blistering, &c. The active symptoms were speedily subdued; but the patient continued to experience dull gnawing pains, increased by motion, sometimes in the loins, and at other times in the thighs and legs. Various means were used without much effect; and the physician was therefore induced to give a trial to the ingenious proposal of employing a vapour bath of camphor fumes, as recommended by M. Dupasquier in the *Revue Médicale* for 1826. The patient was made to sit on an open-seated stool, under which was placed a chafing-dish. A plate of iron was then put on this dish, and, the patient being enveloped in a blanket, a small spoonful of powdered camphor was thrown, every five minutes, on the heated plate until about half an ounce had been used. The vapour speedily induced a copious perspiration, and this was promoted by putting the patient into a warm bed, and giving him copious diluent drinks. The first, and even the second, fumigation did not produce any very decided relief; but by the fourth day (for the treatment was repeated daily) the pains were greatly abated, and the freedom of motion much increased. Considerable debility followed the employment of this medication; but by appropriate means the strength of the patient was speedily restored, and he remained free from his rheumatic pains.—*Journal des Connaissances Med. Chirurg.*

23. *On a particular kind of swelling of the Tonsils, Uvula, and soft Palate.* By Dr. Rosch.—In obstructions of the portal system, in deficient activity of the mucous membrane of the intestinal canal, and particularly in diseased states depending on sluggishness of the intestinal secretions, the tonsils, uvula, and velum swell from time to time, still remaining soft: they appear to be traversed by small blue vessels, and to have acquired a bluish dark-red colour; the swallowing is somewhat impeded, and the voice not unfrequently acquires a hoarse tone. This condition may be apparent one day, and lost on the following; but it frequently continues many weeks, and disappears only on recovery. In general it keeps pace with the improvement or deterioration of the general complaint, so that, e. g., on the re-establishment of the action of the bowels by means of laxatives, it disappears. The author considers such a condition of the throat always as a symptom of obstruction, and also as a symptom of chronic gastritis, in cases where the patients are already very much debilitated, where there is an evident predominance of the venous system, and where there is a tendency of the blood, however small, to be evacuated by the intestinal canal. An analogous state of parts is seen in the blue discoloration of the lower lip in hydrothorax, hemorrhoids, &c., and which is indicative of obstruction.—*B. and F. Med. Rev.* from *Jahrbücher*, &c., No. 2. Heft. 2. 1837.

24 *On Antimonial Suppositories as a mean of restoring the Hemorrhoidal Flux.* By Dr. A. Trousseau.—The physicians of past ages, have, perhaps, too much exaggerated the importance of hemorrhoids in the scale of pathological phenomena while those of our own time are fallen into the contrary extreme.

It cannot be denied that the suppression of the hemorrhoidal flux, when habitual, may be productive of general disorders among men, almost as serious as the suppression of the menses in women. Moreover, it is as generally admitted, that with certain persons who have, not only regularly, but at indeterminate periods a draining or hemorrhoidal flux, the existence of this pathological condition is attended with a state of general good health; although it may remain for a long time uncertain and variable, provided the hemorrhoids do not manifest themselves as soon as usual. Observation shows, also, that persons who have had hemorrhoids for a long time, suffer generally, if this flux entirely ceases. And it often happens that there is a call for its restoration.

Many means have been advised to effect this indication. The warm loca

baths, mustard foot baths, leeches to the part, suction applied to the lower part of the large intestines, purgatives, and cupping glasses to the part. Of all the means which we have made use of, only one has succeeded in any satisfactory manner. This is the application of cupping glasses. This mean was entirely forgotten, when a student of the Medical Faculty of Paris restored it to honour, and I am able to bear witness to its effects on him.

He had had hemorrhoids till the age of twenty years, and always enjoyed good health. This flux now ceased, when he became subject to violent pains in the stomach, and continual disorders of the digestive organs. He consulted M. Andral, while attending the Hôpital de la Pitié, and this physician made use of every mean advised by authors for restoring this flux. Nothing succeeded, and the disease remained stationary. The young patient then conceived the idea of applying a cupping glass to the part. During this application the circumference of the anus enveloped the hemorrhoidal tumours, which for eight days were swollen and painful. From this time his health was re-established. A month after this he experienced a slight return of gastric disorder; and one day, while attending my visit to the hospital, he spoke to me of the relief which he had obtained the previous month from the sufferings which he now began to feel again, and offered to let me witness the prompt appearance of the hemorrhoids under the operation of the cupping glass. I accepted the invitation with alacrity, and at the same time I placed him upon the bed of one of the patients, and in the presence of more than forty physicians and students I applied a cupping glass to the fundament. A minute did not elapse when the tumours made their appearance, and becoming united, they acquired the size of a small pigeon's egg ten minutes after the application of the instrument. The same means were made use of the following day, and the hemorrhoidal flux continued for a week, and was followed by a cessation of the disorders of the stomach. M. Andral also saw this young physician, and can testify with me to the great rapidity with which the tumours became swollen.

After this I had only one opportunity of locally applying cupping glasses for recalling hemorrhoidal flux. This was with a female afflicted with erratic rheumatism, which to me appeared to be caused by the suppression of habitual hemorrhoidal flux. I succeeded in puffing up the hemorrhoidal vessels by means of the cupping glass; but the tumours disappeared soon after the application of the instrument. What prevents my using this remedy more frequently is this: in the first place, patients, especially women, have a great aversion to it; secondly, I have conceived that a much more simple remedy, and the employment of which can never be the subject of serious objection, will answer the same end, I allude to antimonial suppositories.

As I had never succeeded with aloetic suppositories, I thought by substituting in the place of aloes one of the most energetic irritants I might attain the desired end. Now, tartrate of antimony, applied locally to the skin or mucous membrane, creates an inflammatory action very powerful and persisting, I therefore preferred this article. I mix with a drachm of butter or lard, from two to six grains of tartrate of antimony. The suppository, being introduced within the sphincter of the anus, melts quickly, and the tartrate of antimony remaining in contact with the mucous membrane, excites a lively local irritation, a species of tenesmus, as a necessary consequence. When the suppository contains only a grain, or half a grain of the tartar, it can be retained for twelve hours without the necessity of going to stool; but when a greater quantity of it is made use of, the patient experiences a heat, at first slight, but afterwards scorching, and attended with painful pulsations at the part; there is a necessity of frequently going to stool. The arterial pulsations increase at the same time that the circumference of the anus protrudes, and pustules, similar to those excited by tartar emetic on the skin, now appear; bluish tumours arise, hard and painful, permitting occasionally a large quantity of blood to transude. These are the true hemorrhoidal tumours, perfectly evident with those who have had them already, and only apparent with those who have not had them.—*Journal des Connaissances Medico-Chirurgicales*, Sept. 1836.

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25. *On some of the causes of sterility, and the means for their removal.*—M. Serrurier has read to the Society of Practical Medicine of Paris, some remarks on

certain causes of sterility which may sometimes be remedied. The conformation, direction, extreme softness, or induration of the neck of the uterus, are sometimes the sole cause of conception not taking place. M. S. cites some cases of sterility, resulting from the above causes, successfully treated.

A young woman who had been married for several years, and was in the utmost distress, was examined by M. S. He found that the os uteri was turned towards the coccyx, and he attributed her sterility to this cause. Various measures were tried to remedy it, but without success, when an accident accomplished what was desired. She fell from a horse, and either from the shock or the long confinement which was rendered necessary by her injuries, the position of the os uteri was corrected. This fact being ascertained by M. S., he advised the lady's husband to have connexion with her at her menstrual period, and conception took place.

In another female the neck of the uterus was soft and insensible, and M. S. ascribed her sterility to this condition of the parts. He prescribed tonic injections, and, as the patient was of an ardent temperament, he recommended, for some time, complete continence. After this treatment had been continued for some months, she received again her husband, and in due time became a mother.

In a third the neck of the uterus was extremely rigid. Emollient baths and injections, with frictions to the neck of the uterus with extract of belladonna, remedied this state of the uterus, and the patient soon afterwards became pregnant.

M. Serrurier thinks that conception usually takes place during, or immediately after, the menstrual period, and he advises connexion at this time, after a certain period of abstinence.

Dupuytren relieved a woman who had been married twelve years without having conceived, by dissecting away the extremity of the neck of the uterus, which had a fleshy prolongation, with a wrong disposition of the os uteri.—*Journ. de Méd. et de Chirurg. Pratiques*, Nov. 1837.

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26. *Method of treating Intermittent Fevers, in the Infirmary of Clinical Medicine of the Surgical School of Lisbon.* By Prof. Lima Leitao.—Ague is of very frequent occurrence among the labourers in the flooded or marshy grounds bordering on the Tagus. The following divisions comprise the varieties observed: 1st. intermittents proceeding from gastro-duodenal phlogosis; 2nd. those arising from inflammation of the liver, of the spleen, or both conjointly; 3d. such as proceed from phlogosis embracing simultaneously, wholly or in part, the gastro-duodenal mucous lining, the liver, and the spleen; 4th. intermittents not arising from inflammation.

1. The symptoms of the cases referred to the first division are thus described. If, during the intermission, the following phenomena are observed—redness of the margin of the tongue, with a white or slightly yellow coating on its surface; more or less thirst; an obscure feeling of pain or weight in the epigastrium, even when pressure is not applied; a sense of heat in the urethra and rectum in passing urine and fæces; nausea, or vomiting of mucous or bilious matter; a pulse without being decidedly febrile, yet not that of health; then, according to the author, there exists inflammation of the mucous membrane of the stomach, duodenum, or both. This form of the disease Dr. L. has observed exclusively in persons of the sanguineous, or bilio-sanguineous temperament; of youthful and adult age; of a constitution not yet broken-down, and in first attacks of ague. He does not remember to have observed it in the quartans of Portugal; but only in quotidians, and double and single tertians. For its cure he recommends, repose in bed; a diet of light broth; beverage lightly acid and edulcorated (*agri-doce*) or mucilaginous, according to the taste of the patient, taken tepid; and emollient *enemata*. After the second paroxysm, or after twenty-four hours' repose in the hospital, whatsoever number of paroxysms besides the second may have occurred prior to the patient's admission there, leeches are applied to the epigastrium, followed by poultices. The number of leeches is proportioned to the age of the patient, twenty-four being the mean number. Dr. L. thinks the paroxysm the most suitable period for their application. Should the symptoms above described have disappeared in the apyrexia next ensuing, but should the paroxysm follow with the same or nearly the same intensity, a grain of the sul-

phate of quinine is given every three hours, every two hours or every hour (according to the type of the disease) during the intermission. After each dose of the medicine Dr. L. gives some mild mucilaginous or sugared beverage, and very little other sustenance is taken. It is important that the apyrexia be perfect, and that the indications of local affection have ceased before administering the sulphate of quinine, otherwise there is risk of converting the disease into the remittent or continued form.

Should the inflammation resist the first application of leeches, they must be repeated a second or even a third time, till it is removed. If the paroxysm does not recur after the application of the leeches, or if it be much diminished in intensity and later in coming on, no sulphate of quinine is administered; and, in the latter case, it is observed, that after one or two fits more and more slight, the disease ceases. The author thinks that convalescence is more speedy and relapse less liable to take place in these, as it were, spontaneous recoveries, than where the sulphate is employed.

2. In the second division, comprising cases in which the liver, the spleen, or both conjointly are affected, the author recognises the phlogosis of the liver (should there not be enlargement) by obtuse pain, heat, and tension, increased by pressure; yellow tinge of the face and eye; yellowish furred tongue; bilious vomiting and dejections, &c. When the liver is enlarged, the local symptoms are referred to the left lobe. If the spleen suffers, it presents analogous local symptoms: both organs are often simultaneously affected. The remedies of this form of the disease are the same as those of the preceding, with this difference, that general blood-letting is found more serviceable than leeches, or, at least, should precede their employment. Two bleedings of eight ounces each are generally sufficient. Dr. L. has seen intermittents of this division and of all types, yield to depletion alone by general followed by local blood-letting; and this successful result from depletion solely has been more manifest in the diseases of this than the preceding division.

3. The third division, comprising intermittents connected with inflammation of the gastro-duodenal lining, and of the liver and spleen conjointly, is marked by a combination of the symptoms of each of the preceding diseases. The malignant intermittents, observed by the author in eastern Africa, belonged to this class. The treatment consists of the methods employed for the other two divisions combined, that is bleeding, general and local, excepting in nervous temperaments, when he has recourse only to the latter. He thinks this kind of case very suitable for the endermic method of employing sulphate of quinine. In the malignant intermittents of eastern Africa, he derived much advantage from frictions of tincture of bark, and from sprinkling blistered surfaces with powdered bark and camphor.

4. The fourth division, consisting of cases unattended with local inflammation, he treats as he does those of the preceding, except that bleeding is omitted.

The author subsequently gives a practical commentary on the 59th aphorism of the 4th section of Hippocrates, "tertiana exacta in septem circuitibus ad summum judicatur." Having tried its truth, he found the patient, solely from the influence of low diet and repose, escape the seventh paroxysm in some cases and the eighth in others. The examples in which this fortunate result took place, belonged principally to his fourth division; but a proportion of them to his first, or that comprising the complications with gastro-duodenal inflammation. These spontaneous recoveries, wheresoever they occur, Dr. Leitao regards as the most favourable, the general health being the least disturbed, convalescence most prompt, and relapse very rare.—*B. and F. Med. Rev.* from *Jornal da Sociedade das Sciencias de Lisbon*, Feb., Ap., 1836.

27. *New method of curing Stammering.*—Dr. Voisin was afflicted with an impediment in his speech, for the cure of which he tried every plan, but without success. Finally, chance led him to the discovery of a method which he has adopted with advantage. He was reading a paper before a society, and wishing to do so with some energy, he happened to look in a mirror which was opposite him, and perceived that he rested the border of his right hand upon his chin, in a manner so as to depress the inferior maxilla and hold the mouth half open. The idea immediately suggested itself that this instinctive and mechanical movement

might contribute to his reading more promptly and easily. In fact, upon ceasing the pressure, the difficulty of expression was quickly reproduced; but upon replacing his hand the freeness of articulation immediately returned. Endeavouring to give an account of this, he observed: 1st. That the mouth was kept half open, the distance between the teeth being a line or a line and a half. 2nd. That the tongue, abandoned to itself, in the state of repose placed itself against the inferior dental border, whilst during pronunciation it is projected forwards and upwards, but is withdrawn almost immediately behind the alveolar arch. 3d. That a medium pressure is necessary upon the chin; this should be sufficiently strong to resist the muscles which move the inferior maxilla, without impeding its movement of elevation, so strong as to prevent perfect approximation. To produce this pressure, and, at the same time, make it excusable, it is necessary to use a certain delicate art, so that the manœuvre may not appear forced, but on the contrary almost natural. This pressure should be made with the external border of the right or left hand indiscriminately, the thumb applied upon the chin and the fingers free. Since he has made the discovery he finds he frequently takes the position without thinking of it, and has observed the same in other individuals afflicted with impediment of speech. This habit does not appear to be peculiar to stammerers, since it is frequently assumed by timid persons when speaking in public. Dr. V. has only had an opportunity of trying it in two individuals, but the effect surpassed his expectations.—*B. and F. Med. Rev.* from *Bull. de l'Acad. Roy. de Méd.*, Sept., 1837.

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28. *Treatment of intussusception by inflating the bowels.*—Samuel Mitchell, Esq., suggests, in a communication in the *Lancet*, (17 March, 1838,) a trial of inflating the bowels with air as a remedy for intussusception in children, and relates a case in which he has resorted to it with success. Though there is no novelty in the suggestion, the case is interesting, so far at least as affording additional evidence of the utility of the measure. It is one which should never be neglected in the affection in question.

SURGICAL PATHOLOGY AND OPERATIVE SURGERY.

29. *Cæsarean Section.*—The propriety of an early resort to this operation in cases where it is necessary, has been very properly insisted upon; but the circumstances which render it necessary, are not always readily determined. M. Castel stated, at a recent meeting of the Academy of Medicine, (February 17th, 1838,) that some years since a woman was in labour at the *hospice de perfectionnement*, the professors were all assembled, and the cæsarean section resolved on. The crowd of students was so great that some delay took place whilst arrangements were making for their accommodation, and during this time the woman's delivery took place naturally.

M. Gimelle also stated that he saw, at the *hospice* of M. Dubois, a small woman who had five times submitted to the cæsarean section, and who was delivered naturally the sixth time.—*Gaz. Méd. de Paris*, March 3, 1838.

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30. *Ligature of the primitive Iliac Artery near the bifurcation of the Aorta, successfully performed for an Aneurism of the external Iliac Artery.* By M. Salomon, Professor in the Medico-Chirurgical Academy of St. Petersburg.—Luke Padurbusr, invalid, aged 38, of good constitution, addicted to drinking, had some years before laboured under intermittent fever. Ten years ago he suffered from a chancre on the glans penis, and a bubo in the left groin, which suppurated, and has left a large cicatrix: since this time he always enjoyed good health. Six months before his entrance into the hospital he received a kick from a horse in the left groin, which was shortly afterwards followed by the formation of a tumour in the same region. This tumour made rapid progress, and soon rendered walking difficult, without, however, being painful. He entered the hospital on the 24th of May, 1837, the tumour one month previously having acquired a rapid increase, and the patient during that time having been obliged to keep his bed.

On examination he presented the following appearances. A large tumour in the left groin without well-defined limits; it extends inferiorly to four fingers' breadth below, and superiorly to four fingers' breadth above Poupart's ligament; externally it reaches the anterior superior spinous process of the ileum, and internally it extends to the median line and symphysis pubis. The skin covering it is of a natural colour, but tense; pulsations very strong, appreciable to both touch and sight. The strongest pulsations exist at two fingers' breadth above Poupart's ligament, at which point the skin is much distended, thin, and a peculiar, very strong pulsation is felt. With the stethescope a "bruit de soufflet" is heard. The tumour extends into the cavity of the belly along the exernal iliac artery, to the origin of which it can be traced. It diminishes in size, and its pulsations cease upon the aorta being compressed. The thigh is kept semi-flexed, and the slightest attempt to straighten it is very painful. The pulse is full, strong, and frequent. The patient complains of severe lancinating pains extending along the external side of the thigh to the knee and ham; he is exhausted by his sufferings and want of sleep, and is anxious for an operation.

These characters were fully sufficient to diagnosticate a false aneurism of the external iliac artery produced by a blow. The sudden increase of the tumour may probably be attributed to rupture of the sac.

Immediately after his entrance into the hospital, I prescribed venesection to the extent of a pound and a half, a mixture with nitre, tartar emetic and distilled water of cherry laurel, and cold fomentations to the tumour.

The patient being anxious for an operation, and the tumour not being accompanied with any complication, I determined to take up the primitive iliac artery, an operation done the first time by Prof. Mott of New York and afterwards by Crampton of Dublin, in cases of aneurism of the external iliac artery, and nearly at the same time by Guthrie of London, in a case of fungus hæmatodes. Before undertaking the operation, I requested the advice of Baron Wylie, Prof. Bouch, counsellor of state, and M. Arendt, physician to the emperor. These gentlemen being of the same opinion as myself in regard to the indispensable necessity of the operation, I proceeded to execute it on the 26th of May, in presence of MM. Bouch, Arendt, Seidlitz, Beverly, Saharof, Petrof, and many other medical men, together with a large number of pupils of the Medico-Chirurgical Academy. M. Kklitzki, adjunct professor to the clinic, assisting me.

The patient being laid out upon a table and secured, I made an incision from four to four and a half inches in length upon the integuments of the left side of the belly, commencing one inch within the anterior superior spine of the ileum, continuing it parallel with the inferior epigastric artery, and terminating at one finger's breadth below the last false rib. I divided, in the same direction, the superficial fascia and the fleshy parts of the three abdominal muscles, a grooved director being used when I came near to the peritoneum; I then pinched and raised up the fascia with forceps, and scratched a hole in it with a scalpel, after which a director was introduced beneath it, and the opening dilated.

The peritoneum was by this exposed, which membrane I detached with my finger at first, from the aponeurosis of the internal iliac muscle, then from the psoas. To do this I carried my finger into the middle of the wound directing it towards the internal side against the lower lumbar vertebræ, in order to detach as little as possible of the peritoneum. My aid having then held (with his forefinger placed at the superior part of the wound,) the peritoneum and the intestines, I continued the detaching of the peritoneum in the cavity, and reached, without difficulty, the primitive iliac artery which I felt pulsate very plainly; it was sound, and appeared like a tense cord. After being well assured by the touch, of the direction and situation of the artery, (I say by the touch, for it was not visible on account of its great depth,) I separated it from the vein with my left forefinger, and completely isolated it with the aid of an obtuse aneurismal needle introduced into the bottom of the wound along the left forefinger. I separated the artery in a small extent at first from the internal, then from the external side, in order that neither the left ureter nor any nervous filament might be included in the ligature. I should here remark, that both the ureter and artery may, during the operation, be lifted up together with the peritoneum, as was done in the case of Guthrie. In my operation, however, I found no difficulty in feeling the artery in the bottom of the wound, and isolating it.

Afterwards the spring needle of Deschamp modified by M. Arendt, armed with a strong round ligature, was passed beneath the artery from within outwards. Having raised up the two ends of this ligature in such a way as to press for a moment the vessel, I assured myself that the pulsations ceased in the tumour, and then removed the needle. The ligature was tied with a simple double knot, and I was careful at the moment of doing so that my assistant drew away carefully, with his finger, the peritoneum, and the intestine from the loop of the ligature. This part of the operation did not offer any serious difficulty. Both ends of the ligature were drawn over the side of the wound. Immediately after the ligature was tightened the pulsations ceased in the tumour, and its volume sensibly diminished. The sides of the wound were brought together with adhesive plaster, and covered with charpie, compresses and a bandage.

The patient lost but very little blood during the operation, none of the vessels divided requiring a ligature. Carried back to his bed, he was placed upon his back, the thigh and leg semiflexed. The pain that he had experienced in the thigh and knee were much relieved. The limb was benumbed, and its heat diminished during some hours. Bottles of hot water were applied to the feet, and the limb was surrounded with bags of hot bran.

26th. Evening. Pulse strong and frequent, but the patient is doing well. Venesection ℥xiv.; fifteen drops of cherry laurel water every three hours; lemonade for drink—solution of cream of tartar.

27th. Pulse febrile; costiveness; a tablespoonful of castor oil, which operated well; the lower limb is hot; the patient begins to feel pain on the inner side of the knee; the soft parts in this region are hot and swollen, and the skin red; application of ten leeches over this point; little bags of emollient herbs, hot leaves of hyoscyamus upon the knee.

29th. Swelling about the limb has diminished; the temperature of the skin is sensibly less; its surface is pale and shining. Frictions with camphorated volatile liniment, are made on this part. A superficial slough has appeared on the external side of the foot over the fifth metatarsal bone, compresses wet with spirits of turpentine and camphorated spirits of wine are applied to it. The rest of the foot is hot. The general state of the patient is satisfactory. He has slept several hours. Pulse less frequent. Cherry laurel water omitted, lemonade continued.

30th. The patient has slept well and feels stronger; pulse 80, and soft; temperature of the body natural; tongue good; bowels natural; the left lower extremity is hot; the size of the aneurismal tumour has considerably diminished; dressings removed; wound looks well, the greater part of it having united by the first intention. Suppuration is seen only at the point at which the ligature passes out. The pus is in small quantity, and of good appearance. As the swelling of the knee is again painful twelve leeches are ordered to it.

31st. Patient slept well; general condition good; inflammation of the knee is less violent; slough on the foot is circumscribed, but a like slough is seen on the skin of the pallet, which is surrounded by an erysipelatous redness; suppuration of the wound is healthy.

June 2nd. The swelling of the knee is more painful; twelve leeches were applied to it, which produced its complete resolution. Another small superficial slough is formed on the external part of the sole of the foot. The general state of the patient, as well as that of the wound, is satisfactory.

From this time the patient went on improving; his strength, appetite, and natural sleep returning. Towards the end of June the tumour had diminished to nearly one-fourth of its original size, and was converted into a hard mass. The temperature and sensibility of the diseased limb had returned to the natural state with the exception of the toes and sole of the foot, which are yet as if benumbed. All the gangrenous sloughs have separated and the wounds cicatrized.

The ligature came away on the thirty-second day after the operation, and the wound quickly cicatrized. Two months after the operation the patient was completely cured.—*Gazette Médicale de Paris*, Dec. 30, 1837.

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31. *Treatment of Erysipelas by Raw Cotton.*—The efficacy of cotton in the treatment of burns, and the analogy between the inflammation of the skin produced by heat, and of erysipelas, has led M. Reynaud to employ the cotton in the

latter disease; and he has found the application equally beneficial. In erysipelas, as in burns, M. R. says, the cotton calms pain, as it were, by a charm; a mild and moist warmth takes the place of the itching, the formication, the sharp and biting heat which so much increase the pain; the swelling gradually diminishes, the redness disappears, the skin becomes flaccid and wrinkled, and without becoming covered with those furfuraceous scales, which characterize the termination of erysipelas, and which sometimes continue during a long period. All that separates are a few slight layers of epidermis, and this is speedily effected. The general excitement ceases with the local phenomena, the fever diminishes, and in simple cases the organic functions return to their normal state, without the necessity of any other treatment. A circumstance of great advantage in the use of cotton is, that it is equally fitted for, and produces analogous effects, in all forms of erysipelas, whether idiopathic or traumatic, whatever may be its situation, on the face, body, or limbs; whatever may be the depth of the tissues which are affected; for in the cases which are collected, are some of phlegmonous erysipelas greatly amended and others entirely arrested by the simple application of cotton. The result, M. Reynaud would thus explain,—that the cotton acts by exciting in the diseased part a moderate warmth, a sort of vapour bath which keeps up a constantly equable temperature, a proper degree of humidity, by keeping the diseased part from contact with air and light, two powerful excitants of the cutaneous system. Cotton does not suffice in all cases; no more than other remedies does it enable the surgeon to dispense with general means, but it lends to these a great assistance: it hastens the resolution, and when this termination cannot take place, it still serves to limit the inflammation, and to arrest its progress.

The method of applying the cotton is very simple. Raw cotton which is well carded must be selected, in order that it may be free from all foreign substances which it sometimes contains. A layer sufficiently thick to protect the diseased part from the light and air must then be applied, taking care always that the cotton extends some inches beyond the limits of the inflammation. A compress and a few turns of a bandage will keep the cotton applied. A linen mask is well fitted for the face. The cotton should be removed every twenty-four hours to judge of its effects, or, if there is no contra-indication, it may be allowed to remain during the whole course of the treatment. If the cotton should adhere too strongly to the skin, in a case where there is slight exudation, it may be removed by applying over it an emollient poultice. The author has added to the previous remarks, several cases of various forms of erysipelas treated with cotton; to which it is unnecessary to call the attention, otherwise than to state that seven are cases of simple erysipelas of the face and extremities; that one is of traumatic erysipelas; the ninth of erysipelas complicated with a miliary eruption; four of phlegmonous and one of gangrenous erysipelas.—*Journ. des Connaiss. Med. Chirurg.* Feb. 1837.

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32. *Tapping the Head in Chronic Hydrocephalus.*—This operation was proscribed by Gölis, Boerhaave, Heister, Hecker, and Portenschlag, as altogether cruel and useless; and one of the most eminent practitioners of our own country asserts that it has nothing but its hardihood to recommend it. An attentive examination, nevertheless, of the facts which our science now possesses will show that this entire condemnation of the operation is unjust. Vose, Graefe, Rossi and Russel, have each reported cases in which they have performed it with success; and Mr. Greatwood has related a case, where a child of fifteen months old was accidentally cured of the disease by falling upon the back of the head upon a nail; above three pints of fluid gradually escaping from the puncture thus made. A similar case has been also recorded by Dr. Höfling, of Heinfeld, in *Wochenschrift für die gesammte Heilkunde*, 1837, No. 41. The patient, a boy, aged 5, presented the symptoms of chronic hydrocephalus in a marked degree. The temporal and frontal regions of the head were, in particular, largely developed, and projected far over the diminutive face. The general health, however, still continued good, and there was no particular ailment. Whilst in this state, the boy received a severe blow on the forehead from the hoof of a cow, which produced momentary stupefaction. Examination shewed that the frontal bone, already extremely thin, had been broken by the stroke, and that a considerable quantity of water had escaped, and still continued to flow from the

wound. The water continued to come away in a steady flow during the eight following days, when the wound closed. Two years after this accident, the boy continued in the enjoyment of good health. The head was still large when compared with the face, but its proportion to the body was nearly natural.

In our No. for August 1830, we inserted a notice of two cases of Hydrocephalus, in which the water had been evacuted by puncturing the ventricles, by Dr. Conquest, of London, and it appears from a communication in a late No. of the *London Medical Gazette*, (17th March, 1838, p. 967,) that the physician just mentioned has since resorted to the same measure in seventeen cases, making *nineteen* in all, and that "of these, *ten* were living when last heard of."

"Several of the children, before the operation," he says, "were reduced to the most deplorable condition, having frequent convulsions, with loss of sight, emaciation, &c.; but the diminution or disappearance of these symptoms has been very remarkable. In some cases the results have been triumphantly successful; in others, from the reluctance of the patients to have the operation repeated, only temporary relief has been afforded; but none of these children died either during or immediately after the operation, and those which, in the subsequent list are reported as dead, survived weeks or months after the fluid was withdrawn."

The operation as performed by Dr. Conquest, "consists in passing a small and delicately constructed trocar into one of the lateral ventricles, and drawing off so much fluid as the powers of the constitution will admit of. The most eligible spot at which the trocar can be introduced, is in the course of the coronal suture, about midway between the crista galli process of the ethmoid bone and the anterior fontanel, so that the danger of wounding the corpus striatum is avoided on the one hand, and the longitudinal sinus on the other. The instrument usually penetrates about two inches, and in most cases the serum has been colourless, but occasionally tinged with blood. In one instance, and that was in the last child operated on at St. Bartholomew's only a few weeks since, a large and alarming quantity of florid blood escaped; most likely from a branch of the meningeal artery. Sometimes on withdrawing the trocar the water will not flow until a probe has been passed along the canula to remove portions of cerebrum which block it up. After taking away all the fluid that can be removed consistently with safety, the head, which should always be steadily compressed by an assistant during the operation, may be strapped with adhesive plaister, that it may retain its diminished size, and that the fearful consequences of suddenly removing long-continued pressure from the brain may be averted."

The *first* operation was performed in the autumn of 1828, on Catharine Seager, aged 20 months, whose head had been enlarging during the previous six months. Not more than two ounces of serum flowed; but on a probe being passed into the ventricle when the child reached home, a considerable quantity of fluid escaped *stillicidio*, so that during the night it was calculated that the saturated bandages and napkins could not contain less than two pints. Only one paroxysm of convulsions followed the operation, and some symptoms of meningeal irritation which supervened were speedily subdued by leeches and evaporating lotions. Two years and a half subsequently Dr. Conquest saw this child in perfect health, and in the full possession of its intellectual powers.

The *second* case was that of William Honey, aged 8 months. The enlargement of the head had been perceptible about six weeks, and on the 20th of November, 1829, Dr. C. tapped him at St. Bartholomew's Hospital, and withdrew twelve ounces of colourless serum from the right ventricle. December 2nd, twelve ounces more were drawn off, and on the 16th, an additional ten ounces and a half; making the total quantity thirty-four ounces and a half. This child was in a most promising way; when it was attacked with pertussis, and fell a victim to this disease some months after the last operation.

The *third* operation was performed on a patient of Dr. H. S. Caldwell, and we quote the case as related by this last named physician. "William Wilmer, aged 4 months, came under my care in the month of July, 1830. His head was of an enormous size, and had been so from its birth: the forehead was large and prominent; his eyes heavy, and somewhat convulsed; frequent hiccup and vomiting, &c. Several gentlemen had seen the case, and they all gave it up as hopeless. In the beginning of August, Dr. Conquest performed the operation upon this child, and immediately the fluid issued forth in a stream, at first clear, and after-

wards a little tinged with blood. During the remainder of the day the child continued rather weakly, but was more lively than he had ever previously been, and for some time afterwards the intensity of all the former symptoms greatly diminished. When a month, however, had nearly elapsed, it was considered requisite to repeat the operation, and on the 3d of September Dr. Conquest again extracted a clear liquid, to the amount of twelve ounces more. The child sleeps well, eats heartily, is very lively, and in full possession of all its mental faculties."

This child is now in the Orphan Working School. His head, which was so enormously large at the time of the operation, it is stated remained stationary, although the size and strength of the body has gradually increased in proportion to the age of the boy; and now that nearly eight years have elapsed, the head, although disproportionately large, remains at about the same dimensions.

The *fourth* case is that of Elizabeth Forster. From this child's head *fifty-five* ounces were at different times drawn. Dr. F. Cook, who saw this patient five years after the operation, writes to Dr. Conquest: "Her countenance and general appearance are healthy, her appetite good, and her rest at night undisturbed; she has been attending a school in the village, where her progress has been equal to that of the other children; she answered questions which I addressed to her on this and other subjects, with a shrewdness for which her governess says she is remarkable. The greatest circumference of the head is twenty-two inches; the ossification is complete, with the exception of the posterior fontanel, and two other openings of the same size, two inches apart, on either side of the medial line, in the course of the coronal suture."

Dr. Conquest has not published the details of the other fifteen cases; all the information furnished respecting them is contained in the following tabular view of his cases.

No.	Name.	No. of times operated on.	Quantity withdrawn.	Living.	Dead.
1	Catherine Seager .	1	℥ xxxij.	1	0
2	William Honey .	3	xxxivss.	0	1
3	William Wilmer .	2	xxiv.	1	0
4	John Hall	5	xlviijss.	0	1
5	Alfred Parman . .	4	xlv.	0	1
6	Mary Ragon . . .	3	xxvj.	1	0
7	Charles Discomb .	2	xx.	0	1
8	John Ward . . .	1	viij.	0	1
9	John Clauditt . .	2	xxij.	0	1
10	Charles Clarke . .	2	xvij.	0	1
11	Elizabeth Forster .	5	lv.	1	0
12	Jemima Evans . .	1	vijss.	0	1
13	Jane Brocken . .	1	xiij.	1	0
14	Eleanor Mahoney .	1	ix.	1	0
15	Francis Chiddy .	4	xxxiij.	0	1
16	Thomas Norman .	1	vj.	1	0
17	Anne Armenio . .	3	xxxjss.	1	0
18	James Thomson .	2	xiv.	1	0
19	John Pratt . . .	1	ix.	1	0
19		44	455	10	9

From the above table it appears that of the nineteen children operated upon, ten were living when last heard of, and nine are dead; "but it is only fair to state, that as most of these children were amongst the lower classes of society, who are continually changing their residences, several have been lost sight of, and may now very probably be dead, although when last seen some time subsequently to their having been operated upon, they were living."

"Of course," says Dr. C., "these operations have been attended with different degrees of success. Unquestionably some are cases of perfect recovery; but in every instance there has been a very marked diminution of suffering, and prolongation of life, and in no one case has a fatal termination been accelerated.

"Dr. B. G. Babington has analysed the fluid with great care, and states its specific gravity to be 1004. It does not coagulate by heat, acids, or alcohol, and consequently does not contain albumen. Tincture of galls produces no immediate precipitate, but after standing some hours a few brown flocculi subside, proving that it contains a very little gelatine. On evaporation, 1000 grains yield 10 grains of solid matter, chiefly chloride of soda, proved by precipitation with nitrate of silver. The liquid therefore contains, in 100 parts—

Water, - - - -	99.
Gelatine, - - - - -	.1
Chloride of soda, - -	.845
Other salts and loss, - -	.055
	100.000

"In no instance has clearly marked congenital disease been permanently benefitted, and those cases have done best in which effusion manifestly resulted from inflammatory action, and in which cerebral excitement followed the operation."

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33. *Causes which retard the consolidation of Fractures:* The *Archives Générales* for August, contains an interesting article on this subject, by M. Louis Fleury.— Two indications must be fulfilled, observes M. F., to insure the perfect consolidation of fractures: 1st. Placing the broken ends in contact. 2nd. The maintaining them in this position. The former is done with facility, but there are some difficulties in accomplishing the latter. At the present day, most surgeons are of opinion that complete immobility of a fractured limb, joined to strong pressure on the soft parts, are the best means of maintaining the fragments in position, and of obtaining a quick and regular consolidation. Unfortunately, these means are frequently unsuccessful; and, notwithstanding the care used in their application, the callus is frequently thrown out in an irregular manner, or perhaps never formed at all. What, then, are the causes which prevent or retard the consolidation of a fracture? Authors have enumerated a great number, but seem to have overlooked a very important one. Scrofulous and venereal affections, old age,—rents in the periosteum,—formations of pus,—cold applications,—all, undoubtedly, exercise a prejudicial influence. But, by far the most frequent of all the causes, is the apparatus used with the view of favouring the consolidation, which it prevents by the compression it exercises upon the vessels of the limb; whether this compression is inevitable, as in the moveable apparatus, or produced voluntarily by the surgeon.

If a fractured thigh be placed in a thick layer of soft materials, the effects of the compression cannot be very appreciable; for, in this case, although the capillary circulation and the small arterial branches are more or less restricted, still the large vessels continue free. The same does not occur in the forearm or leg, where compression, ever so slight, interrupts the course of the blood, not only in the superficial vessels, but also in those which supply the fractured bone and periosteum. In order to obtain a rapid and regular consolidation, we must be careful not to apply more splints than are absolutely necessary, and not to bind these too tight by means of bandages. In following an opposite method, we wait, sometimes, three, four, or six months, for a union which has not yet commenced. It is then that the surgeon, eager at each dresing to reapply the apparatus, with more care, that is to say, to augment the number of splints, surrounds the limb more exactly, &c., finds himself deceived; and the more he renews his efforts, by the same means, the greater is the distance separating him from his object.

The following case, one of four reported, exemplifies the beneficial results of this practice.

Case. C. D. aged 41 years, had a fall on the 15th of February, 1836, broke his right leg, and entered the same day the Hospital of St. Louis. The fracture was complete, situated immediately above the internal malleolus, and complicated with a deep excoriation and extensive ecchymosis. The wound was dressed with cerate, the rest of the leg covered with charpie dipped in the white of egg, and the ordinary apparatus for fractures of the leg immediately applied. The member was maintained in absolute repose during six weeks. On the 10th of April, the apparatus was removed, the wound was found cicatrized; the ecchymosis had disappeared, but the consolidation had not commenced. The appa-

ratus was reapplied, and a more generous diet ordered. On the 30th of April, the consolidation was a little more advanced. The splints and anterior cushions were then removed, and the limb sprinkled with spirits of camphor. From this period the callus rapidly solidified; by the end of the month of May, it was very resistant, almost inappreciable to the touch, and the patient quitted the hospital.

34. *Kreosote in Gonorrhœa and Gleet.*—Dr. Robert Dick, of Glasgow, has employed the kreosote in the chronic stage of gonorrhœa and in gleet, and thinks its beneficial effects are more obvious than those of copaiba. He administers it in doses of two drops a day, with loaf sugar beaten into syrup, with water.—*Edinburgh Med. and Surg. Journal*, April, 1838.

35. *On the Resection of the Facial Bones.* By Professor Dieffenbach, of Berlin.—The resection of degenerated bones of the face, or the excision of tumours situated between them, belongs to the class of the most formidable operations. It is only in modern times that these operations have been performed to any great extent, and to Professor Saeger, at Erlangen, belongs especially the great merit, not only of having zealously collected all that had been done in this respect, but of having recommended the resection of diseased bones in a great many cases, and having executed himself a variety of the most important and ingenious operations of this kind. I add to his rich experience some cases from my own observation, the number of which, however, is not great, as I began to attempt the extirpation of diseased parts of the upper jaw, and other facial bones, only a few years since, though I had performed, long before, the resection of other bones. Some minor resections of the alveolar process met with success, and gave me confidence for greater operations, in which the success I met with was no less satisfactory.

Case I. The first patient from whom I removed an osteosarcomatous degeneration of part of the alveolar process, was a man 38 years of age. There was a fungous softening, of the size of a small hazel-nut, on the alveolar process of the left side, which surrounded the small incisor. The tooth was loose in the fungous mass, and blood oozed at its sides. I excised with a small saw the diseased part of the bone, in the form of a wedge, and touched the remaining bones with the incandescent iron. Some splinters of the bones having afterwards exfoliated, the wound furnished healthy granulations. In six weeks the depression having greatly diminished in its size, was covered with a smooth scar, and the man was cured without relapse.

Case II. I resected from a woman 38 years of age, who likewise suffered with an osteosarcoma of the alveolar process, which had attained the size of a walnut in the space of a year, the alveolar process, with one molar, one eye-tooth, and one incisor. In this case, also, I made use of the incandescent iron after the operation, for the purpose both of stopping bleeding and procuring exfoliation. After two months the cure was complete, and no relapse followed.

Case III. I excised, from a woman 46 years of age, on account of an osteosarcoma, of the size of a walnut, a part of the upper jaw, containing two incisors, and the left eye-tooth. The incandescent iron having been used, afterwards some fragments of bone were exfoliated, and the cure followed with a smooth cicatrice.

Case IV. A lady, 46 years of age, was afflicted with a hard dark-blue sarcoma, which originated by degrees, and surrounded the roots of two incisors. I excised the morbid part of the bone, and touched the wound with the iron. The operation was successful, and no relapse followed.

Case V. A delicate young woman, 24 years old, had been suffering for three or four months under an osteosarcoma of the size of a large walnut. It occupied the place of three teeth. I resected it in the form of a wedge as high as the antrum highmorianum, and along the hard palate, on account of the bones there being found softened. The incandescent iron was applied to the wound, and the cure was complete in six weeks. The case is a recent one, and no relapse has yet followed.

Case VI. A young, delicate, fair girl, 24 years of age, suffered under a softening of the alveolar process of the upper jaw, which was developed in the space of a year. She had used, in vain, many external and internal remedies; a loose

molar tooth had been extracted, the surrounding part of the fungous substance excised; the surface of the wound was burned, but without success. The progress of the disease was only the more rapid, and was about to affect the zygomatic bone. The teeth projected only by the upper part of the crown from the fungous mass, which was especially developed towards the roof of the mouth. In seizing them with the fingers they felt loose, and the blood oozed out at their sides. Without dividing the external parts of the face, I resected in this case the whole left alveolar process to the incisors, passing with a small saw through the healthy bone, and stopped the strong bleeding by the incandescent iron. Some fragments of bone were afterwards thrown off by exfoliation, and the granulation was healthy in every part, and in five weeks the young girl was perfectly cured, and without any external disfiguration. In consequence of the operation she became flourishing and healthy, and still continues so, though a year has elapsed since the operation.

Case VII. Mad. B., a lady 55 years of age, suffered for a year under a fungous softening of the greater part of the alveolar process of the upper jaw, especially affecting the anterior part of its margin. She had been treated by several physicians, by internal and external remedies, and the loose teeth had been extracted one after the other. After some time, the whole alveolar process was transformed into a thick steatomatous mass, which the upper lip could scarcely cover. After separating the latter from the tumour and turning it upwards, I removed with the saw the whole alveolar process, as far as it was affected, and touched it then with the incandescent iron. The patient seemed cured after some months, and she recovered gradually from her indisposition. But the cicatrix became again softened and covered with new fungous granulations. They were limited by astringent gargles, the pencilling with extr. saturni, and cauterization with nitrate of silver; but the bone softened again, and the patient withdrew herself from my care.

Case VIII. A lady, 32 years of age, was affected for several years with a thickening of the left upper jaw, between the wing of the nose and zygomatic bone, produced by an encysted tumour of the bone. I separated, at first, the cheek from the bone, beginning from the mouth, and removed the anterior part of the sac and of the osseous margin. The posterior surface, situated in the bone, was touched with the red hot iron. The cure followed without any other accident.

Case IX. A man 30 years of age, suffered under an apparent intumescence of the hard palate, which existed for several years, and had increased gradually. The tumour was convex, and not unlike a divided egg. I circumcised it with the knife, and removed it. The bones of the palate, which were much pressed upwards, showed on their middle a small hole. I touched the cavity with the incandescent iron. It became filled with granulations; the palate regained its natural appearance, and the articulation, which before was very indistinct, was restored to its former distinctness.

Case X. The lower jaw of a man 60 years of age, was at several places, and for a long period, enormously enlarged, in consequence of hydatid tumours between the external and internal laminæ of the lower jaw. At different times these were inflamed, and went into suppuration. I treated them as single abscesses by incisions, by which means the suppuration ceased, and the man became well again. The advanced age of this patient would not allow of a radical excision.

Case XI. A man 33 years of age, who, for several years, had become an object of curiosity, in consequence of an enormous thickening of the left cheek, required my assistance. The cheek projected from the face to the size of two fists. The upper part was hard, the lower elastic, and had been ten or twelve years in attaining this enormous developement. I considered it to be an intumescence of the bones of the face, produced by an hydatid tumour. I therefore removed from the mouth the part of the tumour which projected into it, and extirpated through this opening a great part of the sac, together with the sharp edges of the bones. A strong suppuration was produced, and, with the beginning of the cicatrization, the cheek, before withered and attenuated, was so much lightened and contracted, that the patient was cured without the least disfiguration.

Case XII. In a man of about 60 years of age, an osteosarcoma of the left zygomatic bone, attended with much pain, had been formed. At last the integuments

were perforated, and the osseous fungous became plainly visible. Neither internal medicines nor strong cauterization and burning had met with any success. I circumcised the diseased part with the knife, and removed, by means of the saw, the greater part of the zygomatic bone. I happened, by separating the neighbouring healthy integument of the face, to be able to cover a great part of the wound. In three months the patient was cured, with only a slight disfiguration. I did not see him again, and heard, accidentally, that he died of dropsy a year afterwards.

Case XIII. In a woman 60 years of age, a long time after the gradual falling out of the molar teeth of the right side of the lower jaw, a tumour had been formed, reaching, by degrees, the size of a fist. It greatly impeded swallowing, respiration, and speaking, and threatened to destroy life in a short time, as it filled the greater part of the cavity of the mouth and throat. The tumour was free above, and below it was situated between the external and internal lamina of the lower jaw, which were separated by it from each other. It was not required to slit the mouth for the operation, on account of the great laxity of the soft parts. During the extirpation, the tumour was drawn forwards by a hooked forceps, and excised with the knife. I removed then, by the saw, the highly projecting edges of the lower jaw, which had been absorbed in the middle portion. The cure followed in a few weeks. A long time after, a fragment of the bone exfoliated.

The tumour was of a fibrous nature, and there was formed on its anterior and superior surface, a hydatid sac, which was filled with a clear albuminous matter.

Case XIV. In the month of August of the year 1832, I was called to see a Hebrew merchant. I found the second molar teeth of the upper jaw surrounded by an osteosarcomatous tumour. I removed the teeth, with part of the alveola, with a saw. Before complete cure, the man departed for his country; the wound cicatrized very soon afterwards. After the lapse of three months, a new fungus grew from the cavity. A clever surgeon extirpated it, and the wound cicatrized again.

In the year 1833, in the month of May, a new fungous growth was extirpated, and the wound was cauterized with the hot iron. It healed, but, in the autumn of that year, another relapse occurred, and a new extirpation and cauterization were required. For a fortnight afterwards the red-hot iron was repeatedly applied to the fungus.

In spite of these repeated extirpations and applications of the actual cautery, the softening and loosening of the alveolar margin spread over the moiety of the right palatine bone, the nasal process of the upper jaw, and the body of the latter. In order to attack the diseased bone, it was necessary previously to divide the soft parts. I slit up the half of the face, from the right inferior margin of the orbit, descending on the side of the nose, and drawing the knife through the upper lip; the lip and cheek were then raised, and drawn to one side, and the cartilaginous part of the nose to the other. The diseased bones were then removed by the saw to a considerable depth, and the steatomatous degenerated masses on that side were extirpated with scissors. Upon the margins of the bones I produced a strong effect with the incandescent iron, and concluded the operation by applying many twisted sutures, by means of which I united the divided integuments of the face and the upper lip. The pins were extracted in a few days, when the wound was closely united.

In a month the cure proceeded so quickly, that a great part of the wound was filled up by luxurious granulations, to which a solid cicatrization followed. The patient seemed to be cured in the third month, but the upper jaw, near the side of the nose, and part of the roof of the mouth, began again to soften and exhibit the reappearance of the tumour. I extirpated again the diseased parts, and burned the edges of the bone with the red-hot iron. The whole exfoliated, and the cure was complete. The defect of the bones was supplied by an instrument ingeniously contrived by Wallross, with a series of teeth, and a plate for the palate. By this means the patient was enabled to speak with a natural voice. With the exception of a cicatrized line, there was no external disfiguration of the face.

The patient departed to his country, and, after two years, he wrote to me, saying that he was quite well. However, six months later, he apprised me of his disease again having returned. He came immediately to Berlin, to subject himself to a new operation, with his wonted fortitude. I found both the old cicatrices

of the bones, and the neighbouring bones, very voluminous and softened; this was also the case with the left side of the lower jaw; I therefore repeated the last-described operation. I made an incision from the orbit to the angle of the mouth, turned the flap, containing the lip and the cheek, to the one side, ordered the assistant to press the nose to the left side, and removed the diseased bones again by means of the saw. I then burned the wound with the red-hot iron. The wound of the face I united by twisted sutures, and this time also, a good and quick union followed. In a few weeks all was cured in the mouth. No external disfiguration was to be observed. The patient departed home, and has continued to enjoy the best health up to the present moment.

Case XV. Mr. G., a strong young man, 22 years of age, was disfigured in such a manner as to prevent his going into society. The left side of the face projected in the size and shape of a large cocoa-nut, and by this tumour the right side was so much displaced, that the nose was thrown far to the left side. The right eye protruded from its socket, on account of a tumour of the size of a hen's egg, on the point of which the eye was situated. The slit of the everted eyelids had the width, and presented the appearance, of the female labia, when drawn from each other. There was, at the same time, a complete entropium of both eyelids. The integuments of the cheek were much strained and attenuated by strong extension, and covered above with numerous varicose veins. The upper and lower tumours were separated from each other by a deep furrow. The young man, notwithstanding, enjoyed the best health; none of his senses were affected, he could even see with the protruded eye.

It may easily be imagined, that, in this case, many physicians had been consulted, many medicines used, without stopping the disease. The best surgeons in Germany and France had seen the patient, and had treated him with not homœopathic doses, as he had taken, besides other things, 200 bottles of the decoction of Zittmann,* and had been subjected twice to treatment by hunger and inunctions in all their severity; but as none of these methods had succeeded in checking the degeneration, he had discontinued for two years all further treatment. The degeneration, however, had continued its progress, and had gradually increased in size.

Convinced that internal treatment was of no use, that the tumour was of a fibrous nature, I resolved to perform the operation. I first made an incision, beginning from the external corner of the eye, and descending over the apex of the tumour to the margin of the lower jaw; I then separated the soft parts from the tumours under them, and turned the flaps to both sides. These flaps contained, together with the nose and cheek, the whole lower eyelid, and the deeply contracted fold of the skin, which separated both tumours from each other. I now began to work down below the boundaries of the tumour; I followed it below the extremely protruded zygomatic arch, from thence tracing it over the body of the right upper jaw, I arrived at the base of the cranium, where I found the principal root of the growth, which I separated from the surrounding parts. I separated other roots from out the nasal cavity, to which important ramifications extended. They had dilated the nasal cavity, and pressed down the roof of the mouth, which protruded in a convex shape. I then began the extirpation of the tumour of the orbit. Prolongations passing through the osseous plates of the orbital parietes, connected this tumour with the lower one. It was a difficult undertaking to preserve the eye; but I succeeded in freeing the bulb from all surrounding parts, and in laying bare the optic nerve from the tumour. The tumour was still firmly attached to the orbital parietes; several osseous prolongations, or roots, proceeded from it through the perforated bones; but I succeeded, at last, in becoming master of the whole tumour. The bulb of the eye, with its optic nerve extending like a string at the bottom of the wound, was now, as bare as an anatomical preparation, between my fingers. My friend, Dr. Romberg, so highly esteemed for his researches on nervous diseases, and myself, now tried some experiments on the faculty of vision; we closed the other eye, and wherever we directed the eye, the patient discerned all objects very distinctly. As the bulb was too small for the orbit, there not being any adipose or cellular tissue, I made several coils of the optic nerve upon itself, and brought it into the posterior part

* A decoction of sarsaparilla containing corrosive sublimate.

of the orbital cavity. I then modelled from the lower eyelid, although enormously enlarged, attenuated, and covered with varicose veins, another one on a smaller scale, united it by fine knotted sutures, and, after concluding the operation, I adjusted and secured the large wound of the face by a considerable number of twisted sutures, using, according to the thickness of the edges of the soft parts, thicker or thinner Carlsbad insect pins.

The eyelids were closed to prevent the prolapse of the eyeball, and pressed into the ocular cavity with a large soft ball of lint, and by this means they were brought into a gentle connection with the eye.

The patient was subjected to a very strict antiphlogistic treatment; saline laxatives were recommended; he was bled; leeches were often applied in great number to the face, and day and night fomentations with ice-water were made. By this treatment life was at no time in danger; the wounds healed quickly. On the second, third, and fourth day, the sutures were removed, as the margins were united by the first intention. In a few weeks everywhere in the depth of the wound cicatrization followed. The bulb and the eyelids projected naturally by new formed cellular tissue, and, at a later period, nothing extraordinary could be observed in the young man, except an oblique position of the eyeball with respect to the slit of the eyelids, and an obliquity of the cheek, and hanging down of the angles of the mouth, a necessary consequence of the division of the facial nerve.

Two years after the operation, Mr. G. paid me a visit. The paralysis of the cheek was strikingly ameliorated, and the corner of the mouth was much more moveable. The sight of that eye is complete, and even the eyeball is somewhat moveable, as it follows the motions of the eyelids.

From this case the idea first suggested itself to me, in all my following operations, where a complete division of the one side of the face might be required, and consequently of the facial nerve, to avoid this by not cutting through the cheek, but perpendicularly through the middle of the face, and even then, if the operation should be necessary, on the posterior part of the cheek. I therefore resolved, in the next case, to follow exactly the median line of the face, and, after dividing the nose and lips, to turn to one side the soft parts, like a half mask, and then to perform the operation.

This new method proved successful in the three following cases.

Case XVI. Madame H., 54 years of age, often sickly, observed for several years an impediment in the left nasal cavity, and, at last, she could no longer respire through it. It became completely obstructed, and a dark blue tumour was observed in the depth. External and internal remedies had been of no avail.

The patient now applied to me. I found a melanotic fungus filling the left nasal cavity, by which the external parts were much protruded, and upon them several melanotic tumours were observed.

The patient having taken, for some time, the decoction of Zittmann, I extracted all of the fungus that I could reach with the forceps, and removed then a great deal of the steatomatous degenerated mucous membrane of the nose. The turbinated bones of the nose were affected with caries. When the whole of the diseased parts were removed, the cavity was burned with a hot iron, which had the shape of the little finger. The patient underwent a slight antiphlogistic treatment, and she again took, for six weeks, the decoct. Zittmann.

Several months after the operation, all seemed to do well, and the cavity to heal; but the fungus returned; it affected the inner surface of the nasal bone and the upper jaw, especially the nasal process of it; the soft parts swelled, and the protrusion of the fungus was only prevented in some places by the external integuments.

Three months and a half after the first operation, I performed the second. The soft parts were divided below the forehead, the knife drawing along the back of the nose, and, at last, the upper lip was divided. The parts were separated from their connections; the flaps containing nose, cheek, and lip, were retracted, and the various parts of the ossa nasi, with a portion of the degenerated upper jaw, were removed with a saw. I then removed the carious and fungous portions of diseased bone which presented themselves in the bottom of the wound; some of the latter were prolonged even as far as the frontal sinuses. And, finally, after having cut off a melanotic part of the external integuments of the nose, I united

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the wound by means of a multitude of twisted insect pins, beginning at the forehead and terminating at the upper lip.

The patient was treated on the antiphlogistic plan, and the preparation I delivered to my celebrated friend, Johannes Müller. This gentleman saw the patient on the third day almost cured, and on the fourth the whole wound of the face was united by a linear median cicatrix. Up to the present time, a year after the operation, no relapse has followed.

The following case, however, of the resection of the facial bones, on account of a fibrous tumour, is, undoubtedly, of much greater importance.

Case XVII. One day a lady, closely veiled, came to me, desiring to speak with me alone. She raised the veil, and I imagined I saw before me a pumpkin; I could discern nothing but a large round body, on the one side of which there was a disfigured, distorted face, with a nose pushed to one side; the left ala was enormously extended, and, together with the integuments of the cheek, covered the tumour. The eyelids were likewise greatly extended, and their orifices were oblique; the whole skin was covered with thickly studded varicose veins. The disease had reached this extent by degrees between the 18th and 48th year of her age. I began the operation in this case by dividing the face in the median line, commencing between the eyebrows, which were placed laterally, having been thrown from their natural situation to the position in which otherwise a cheek only is to be found. Having extended the incision to the nose and upper lip, I made over the root of the nose a transverse incision, parallel with the aperture of the eyelid. I then separated the soft parts, *i. e.* the moiety of the nose, the lower eyelid, the upper lip, and the cheek from the tumour, near to the ear, and directed this immense flap to be retracted.

The extent of the tumour, which projected on all sides, and which was uneven, and of an osseous structure, did not allow me to commence resection from within outwards, and I was forced previously to remove with an amputation saw a projecting portion of the size of a fist. I was thus enabled to penetrate with a small saw on the side of the nose to the frontal cavity. I then sawed out the greater part of the inferior orbital margin, together with the inferior wall of the orbit. I then resected the zygomatic arch, and sawed in a transverse direction through the upper jaw, so that the alveolar process only remained. After dividing with a knife-saw the deeper situated hard connections, and separating the softer ones with scissors and knife, I was able to elevate the whole mass with strong levers, and I now beheld a large wide cavity. If the appearance of the tumour before the operation was not dissimilar to a pumpkin, it might be easily imagined now, after the operation, that the cavity had the appearance of an excavated one. On the left and right side, with the exception of the parts where the bones were sawed through, the parietes were felt smooth. The lateral wall of the cavity was formed by the inner surface of one-half of the nasal fossæ. The posterior limits of it were formed by the perpendicular posterior wall of the pharynx. At last I removed a great portion of the tumour from the frontal sinuses, which were enormously dilated. This was followed by the discharge of a quantity of fetid matter.

After restoring the fainting patient, I united the external incisions by a great number of twisted sutures. The eyelids and their corners were united by fine knotted sutures.

The patient at first received an analeptic medicine; the face was slightly covered; internally some wine was given, until the weakness had somewhat ceased and on the following day a slight antiphlogistic treatment, corresponding with the constitution, was commenced by giving a solution of potassa. The thin deeply withered soft parts became slightly raised, and turgescent on the following day, and on the third day the union was so complete that all the sutures could be removed. In one place only, between the lower eyelid and the nose, did the united flaps open again to about the size of a shilling. But I hoped by a future operation to remedy the accident.

The case did not present any complication, or anything worthy of notice during its treatment. After a few weeks the patient was able to get up and move about. No paralysis of that side of the face occurred.

Besides several younger physicians, Drs. Jüngken, Berendt, Romberg and Holthof were present at this operation.

After complete restoration of the patient to health, two things were still to be done with regard to the face, which had become quite straight, viz: to close the opening above mentioned, and to raise up the eyelid, which was somewhat drawn down by the formation of the cicatrix. Through the great thinness of the skin and absence of the subcutaneous cellular tissue, I completely succeeded in the first object, only after some unsuccessful experiments, by refreshing the edges, and by applying sutures, having rendered the approximation of its edges more easy by means of lateral incisions. In the latter, however, I have not yet fully succeeded. The lady, for the last year enjoys the best health, enters into society, from which she had been excluded for more than thirty years. Hitherto there is no appearance of relapse: the cavity left by the enormous wound is much diminished. The face is natural, and the muscles, on both sides, are capable of being put into action. The resected and extirpated tumour was of a fibrous nature. The bones appeared partly absorbed, while in part they remained attached to the tumour, as attenuated though healthy plates.

Case XVIII. Mr. R., a judge, 50 years old, had observed, for many years, a gradually-increasing swelling of the bones of the left half of his face. There was no great pain, but always a dull sensation of pressure. The nose was pressed to the right, and the left wing was higher than the right, which latter covered part of the globular tumour. The skin of the cheek was bluish-red in colour, and was perforated by several fistulous openings. The left nasal bone, the orbital margin, and the zygomatic bone felt softened. In the cavity of the mouth, the alveolar process of the upper jaw, and the whole roof of the mouth were found to be transformed into a steatomatous mass.

The patient had been under the care of able physicians, and had used many of the remedies recommended against diseases of the bones, and lastly, the decoction of Zittmann. The disease, however, had developed itself in spite of treatment, and was about to perforate the whole integuments of the cheek. The patient now determined to come to Berlin.

I commenced the operation by dividing the face from above downwards, the incision passing through the nose and upper lip into the mouth. An upper transverse incision was made into the angle of the eyelids, and the inferior eyelid, the half of the nose, with the cheek, and the whole of the upper lip were separated from the softened bones underneath, until the masseter muscle was freely laid bare. I then commenced the resection, by sawing, at first, through the upper jaw in the direction from below upwards; passing with the saw through the nose, I turned the instrument transversely into the orbital cavity, and removed the greater part of the inferior orbital margin, and of the inferior surface of the orbit. I then sawed through the zygomatic bone, and penetrating into the deep-seated mass, changing sometimes the saw for the knife and scissors, I resected the deeper-situated parts of the upper jaw, the whole osseous part of the roof of the mouth to the velum, and the whole alveolar process. Several large cartilaginous portions of the bones, which were not yet fully softened, were gradually removed, and the parietes of this large cavity were burned with the red-hot iron. The bleeding soon ceased, and I was now able to unite the wound of the face. Twenty sutures were required for this purpose.

The patient was still able to stand after the operation. He was carried to bed, however, and received for refreshment a glass of wine and water. The treatment was slightly antiphlogistic, and as the vital powers appeared to be sinking on the next day, he took an infusion of valerian; however we were soon compelled to return to the use of carbonated waters, Seltzer water, and Saidschütz water, to open the bowels. On the fifth day the whole wound of the face was united, and all the sutures removed, except the inner corner of the eye on account of the extreme thinness of the skin, where an opening remained; but the cure of this will soon be obtained. With a slightly nutrient and strengthening treatment the patient has made such progress, that to-day, twenty-eight days after the operation, he walks about in his room: he was able to leave the bed already a fortnight ago.

In most of the cases of osteosarcoma here related, I had already tried an internal and external treatment, but it never was of any use; the disease proceeded in its developement equally during the treatment, often continued for months. Mercury, iodine, gold, and the decoction of Zittmann, were especially the remedies

by means of which I hoped to produce a favourable effect; externally I applied the pure extract of lead, and this latter appeared to stop for some time the progress of the degeneration.

In most patients the fungus began from an alveolar process, and extended either to the left or to the right, by affecting the neighbouring alveolæ one after the other. The disease seldom spread over both sides from the first affected alveolar process. Extraction of the teeth produced a much quicker developement of the disease. I never extracted teeth but the patients came always to me complaining, that immediately after extraction of the teeth the fungus mass grew very quickly.

After the alveolar process had become degenerated in its greater extent, the zygomatic bone generally became affected before the palatine bones. The whole cheek formed an oval hemisphere; the nose was drawn to one side, and the nostril corresponding with the diseased cheek, formed a continuous level with it. Not only in *La Charité*, but also in my private practice, I have already seen a great number of such patients die, notwithstanding they were submitted to judicious treatment up to the moment of death. In some cases the fungous mass penetrated the skin, which previously became brownish-red, and attenuated, and then the red fungous tissue was seen quite denuded. In others a collection of matter was formed in the cheek, which burst and gave issue to a decomposed and stinking fluid. In these cases the fungus sometimes shot out from the parietes of the cavity; the nasal cavity was obstructed with fungoid masses, and the patients respired only through the mouth.

Having had many of these unhappy examples before my eyes I was induced to perform the resection of the bones of the face to a greater extent, more particularly as smaller operations of this kind had always met with success. I generally found a relapse after resection of the bones, of a much rarer occurrence, than after the operation for carcinoma, or fungus in other parts of the body; at least, the disease, in respect to its curability, is much more favourable than carcinoma of the glands. Amongst the remedies calculated to prevent a relapse, I prefer the decoction of Zittmann to all others.

Some of the operations which I have described, are, on account of their great extent, and the success which attended them, not devoid of surgical interest; but their greatest value, in a scientific point of view, is to be found, perhaps, in the fact demonstrated, that by *dividing the face along the median line*, I have suggested a new method of operating, the effect of which is to prevent the paralysis of one moiety of the face, the infallible consequence of commencing our incisions in the posterior part of the cheek.—*Lancet*, Feb. 10, 1838.

36. *Injections of nitrate of silver in the treatment of chronic vesical Catarrh.*—There is recorded in the *Bulletin Gen. de Thérapeut.* (Jan., 1838,) by M. Alquié, a case of chronic cystitis, which resisted, for three years, various means, and which was cured in a few days by an injection of a solution of nitrate of silver, in the proportion of one grain to four ounces of distilled water. The urine was first evacuated by a silver sound, and the solution then injected into the bladder through this instrument, and allowed to remain for five minutes. The sound was then withdrawn and the injection was evacuated by the patient without any pain. This operation was repeated for four days in succession, after which period the patient was completely relieved.

The remedy is worthy of further trial.

37. *Very large Calculus passed by a young Woman without operation.*—A woman, 18 years of age, who had for seven years suffered from great pain in the pudendum, &c., whilst sitting upon a pot-de-chambre, endeavouring, by very forcible efforts, to discharge her urine, and which exertions she continued for ten minutes, passed into the vessel a calculus of an oval form, 2⅝ inches long, 1⅜ inches broad, and weighing 651 grains.—*Guy's Hospital Reports*, April 1838.

38. *Experimental Inquiry respecting the Process of Reparation after Simple Fracture of Bones.*—This is the title of an interesting article by B. B. Cooper, Esq., contained in *Guy's Hospital Reports*, April 1838. The following is a summary of the result of the author's investigations. "The effects of a simple fracture of bone

are—first, the effusion of a greater or less quantity of blood; next, the absorption of its serum and red particles: inflammation of the bone, and all the surrounding tissues, next takes place: this leads to a deposition of lymph, which soon becomes hardened into cartilages; which, if not different in character, seem, at least, to perform two distinct offices:—that secreted by the cellular membrane of the surrounding soft structures produces, by its hardness and contraction, an approximation or even contact of the fractured portions; and this, proving a fresh source of excitement to the cartilage secreted by the vessels of the bone, leads to its ossification; whilst that thrown out by the soft parts, is, in the end, either absorbed, or converted into a structure the same with that which effused it; showing that the vessels of each part are capable of appropriating their blood to the reproduction of the particular structure from which it was derived.

It may be well to observe, that, in the prosecution of these experiments, no mechanical means were employed, either to produce or maintain a coaptation of the fractured extremities of the bone; but they were left entirely to the action of the muscles, so that a considerable degree of obliquity or shortening almost invariably occurred. In two or three experiments, the results of which I have not published, I did apply splints for the purpose of preventing motion, so as to enable me to judge of the comparative quickness of re-union; but in each case the animal died, as if the splints had given rise to increased irritation. A very similar result to this I have seen in the fractures of bones of young children; when, by merely placing the fractured limb on a pi. ow for support, without any application whatever, the union has been more quickly performed, attended with less constitutional irritation, and followed by less deformity, than when these more complicated mechanical aids were used.

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39. *Opium in large doses to prevent inflammation.*—M. Malgaigne has communicated to the Academy of Medicine his first results from a new method of preventing traumatic inflammation. After wounds from accident or in operations, the principal enemy to be feared is inflammation. This traumatic inflammation, according to Mr. M., consists of but two elements, the nervous element or the pain, and the inflammatory engorgement. It occurred to Mr. M., that by paralyzing the former the latter might be prevented. With this view he has given the gummy extract of opium in the dose of from six to ten grains a day, continuing as long as inflammation is to be feared. The results so far has exceeded his hopes; he has prevented in the four cases in which he has administered the remedy, fever, local inflammation, and even pain.—*Bulletin Général de Thérapeutique,* 15 Nov. 1837.

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40. *Section of a tendon—ligature—cure.*—Professor Serre, of Montpellier, has communicated to the *Bulletin Général de Thérapeutique* (15 Nov. 1837), the case of a surgeon's instrument maker who accidentally divided with the point of a knife the extensor tendon of the middle finger of the left hand, near the metacarpo-phalangean articulation. Not being able to bring the ends of the divided tendon together by extending the limb, he exposed them by an incision, passed a suture through them and thus maintained them in apposition. On the eleventh day the ligature came away, and a short time afterwards the patient recovered the perfect use of his finger, without any untoward accident having manifested itself.

The treatment of divided tendon with the suture is a most ancient one, and it seems surprising that so distinguished a surgeon as the reporter of this case should adduce it as possessing any novelty.

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41. *Dislocation of the Femur.*—The No. of *Guy's Hospital Reports* for April last, contains an account, by Dr. Cummins, of a case of dislocation of the femur, which, on various accounts, is worthy of notice. The subject of the case, a man about 55 years of age, whilst in a state of inebriation, fell from the road, down several feet into a field. The swelling, &c. of the parts rendered the diagnosis of the case, when the patient was first seen, difficult. By the use of antiphlogistics the tumefaction was reduced by the ninth day, when it was determined that the bone was dislocated, and extension was made with the compound pulley, and kept up during nearly an hour, while attempts were made to effect the restoration of the joint to its natural state. The want of success attending these efforts

induced the surgeon to doubt the correctness of his diagnosis; and the next day Dr. Cummins was consulted. He found the symptoms as follows:—

"The right limb was shortened by fully three inches; and it could not be lengthened in any degree. The knee and toes were very much turned out; and the attempt to rotate the thigh inward produced exquisite pain, without producing any change in the position of the limb. Abduction and adduction were nearly equally difficult and painful; but flexion could, to a certain extent, be performed with less difficulty. The hip was flattened; and the trochanter major not to be discovered. There was no hard or distinct tumour on the pubes; but close below the anterior superior spine of the ilium, between it and the situation of the inferior, there was a very distinct, hard, round tumour, which could be felt moving in unison with the thigh when flexion and extension were performed. There was no crepitus, no possibility of lengthening the limb, and, of course, no successive retraction on the removal of the extending force, as takes place in fracture of the neck of the thigh bone. The tumour at the anterior superior spine was fixed in its relative position; and between its most prominent part, and the point of the spine, the distance was only a few lines, and nearly in the perpendicular, as it projected but little into the abdomen."

This condition of things satisfied Dr. Cummins that the case was one of dislocation; that the tumour, situated immediately under the anterior superior spine of the ilium, was formed by the head of the femur; and consequently, that the neck of the thigh bone and trochanter major lay on the contiguous portion of the dorsum ilii, above the acetabulum; and finally, that reduction ought to be attempted by extending the joint in the direction downward and backward, raising the head of the bone, and rotating the knee inward, so as to turn the head of the bone into the acetabulum.

"On the 19th, a grain of tartar emetic having been previously administered at short intervals till sickness and vertigo came on, the extension, by means of the pulleys was gradually increased. Mr. Gibson, having a towel passed under the patient's thigh and over his own shoulder, raised the head of the bone, which now left its position at the anterior superior spine, and gradually came down; and then turned the knee firmly inward, at the same time pressing it towards the opposite one. The head of the bone glided into the acetabulum without any sound or snapping—the fact being only with certainty ascertained by our finding the prominence of the trochanter returned to its proper situation; the tumour, which was formerly at the anterior superior spine, entirely removed, the knee and foot in their proper direction, and the limb of equal length with the other. The extending apparatus was removed, the patient's knees were bound together, and he was placed in bed. In a fortnight, he was sufficiently restored to be able to walk a short way out of doors, and soon entirely recovered from the effects of the injury.—The reduction was effected in about twenty minutes."

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42. *Pes equinus cured by dividing the Tendo Achillis.*—Dr. Gustavus Krauss has communicated to the *Med. Chirurg. Society* the following interesting case of this character. G. Bocock, a boy 17 years of age, in consequence of external injury, became affected with an extensive abscess on the calf of the left leg. The mischief extended over the whole of the leg and thigh. He entered St. Bartholomew's Hospital, and was discharged cured after a stay of sixteen weeks in the hospital. The knee, which had been kept in the bent position during the cure of the abscesses, gradually became extended, but the retraction of the heel still remained when the patient placed himself under my care.

The dorsum of the foot was nearly in a line with the tibia at that time, the articulating surface of the astragalus being very prominent, and the heel being entirely drawn up. The patient walked upon the toes, resting upon the anterior extremities of the metatarsal bones, and the foot offered a true example of pes equinus in a high degree. On the internal side of the gastrocnemii muscles a tight and hard cord existed; the knee could not entirely be straightened; it formed a slight curve, the tendons of the semi-membranosus and semi-tendinosus muscles forming a very prominent cord behind it. A cicatrix extended over the back of the leg and the lower part of the thigh.

Dec. 4, 1837. The tendo Achillis was divided by means of a convex knife. The blade was inserted in front of the tendon with the edge directed towards it

so as to cut through it from before backwards, without dividing the sheath or the skin behind it. The foot was maintained in a position favourable to the union of the divided tendon by the instrument intended subsequently to effect the extension.

6. The wound was healed, neither local inflammation nor any symptom of constitutional irritation having taken place. The space between the two ends of the tendon can be distinguished by its softness and by its livid colour. I began with precaution the extension of the foot.

10. The foot forms with the leg an angle of about 110°. The intermediate substance seems pretty strong but thinner than the ends of the divided tendon.

13. The foot forms a right angle with the leg, and the articulating surface of the astragalus has recovered its natural position opposite to the articulating surface of the tibia.

16. The patient began to walk supported by another person.

20. The foot can now be bent to an angle less than a right angle. Some œdematous swelling has taken place on the foot, extending over the ankles, and also enveloping the tendo Achillis. For the last two days the patient has left his bed.

25. The œdematous swelling somewhat diminished. He walks better.

Jan. 24. The œdematous swelling entirely removed. The intermediate substance can be distinguished by its smaller volume. The patient walks well with a stick, but he rests the point of the foot at first on the ground, and the heel afterwards. The left inferior extremity is about an inch and a half shorter than the other.

Since the beginning of February the patient wears his instrument only at night. He walks now without the aid of a stick a distance of three miles and more. The curve of the knee had much improved. The tendons of the semi-tendinosus and semi-membranosus muscles are no longer prominent.

The following observations on the operation by Dr. Krauss, are worthy of being quoted.

First. The preceding case proves the truth of the physiological law that muscles exposed to extreme long-continued traction become transmuted into a fibrous texture.

Second. I prefer a convex bistoury for the section of the tendo Achillis to the concave bistoury employed in Germany, because it corresponds with the shape of this tendon. But for dividing other tendons the concave bistoury is generally preferable to the convex.

Third. The proceeding of Dr. Duval, to divide the tendon from before backwards, is preferable to the contrary method, because

1. It is the most expeditious.
2. The amount of structure divided is much less.
3. The section of the tendo Achillis in a number of bodies has shown me that the sheath of the tendon is only punctured by this method in a dimension equal to the external incision through the skin. The portion of the sheath covering the tendon behind and opposite to the incision, remains uninjured.
4. Experience has also shown me that sudden retraction of the tendon accompanied by noise will often occur whilst some portions of its fibres remain still undivided. In cutting from before backwards, if the knife is inserted in the proper manner, the surgeon will be enabled to avoid this disadvantage with a certainty which he cannot obtain by the contrary method, because in the latter case it is impossible to discover whether any portion remains undivided under the knife.

Fourth. It is not seldom that in the course of the application of the instrument, an œdematous swelling of the foot takes place in consequence of the pressure. This does not prevent the application of the instrument in the usual manner. The œdematous swelling disappears when the cure is accomplished, and when the continued extension and pressure is no longer necessary.

Fifth. Care must be taken in the course of this treatment of pes equinus that the astragalus does not turn inwards or outwards, and the pes equinus become converted into valgus or varus. This accident may be prevented by a well conducted application of the instrument.

Sixth. The contraction of the tendons of the knee, which not unfrequently occurs in pes equinus, in consequence of the greater length of the limb, gradually

diminishes after the cure of the club-foot, and seldom requires the division of these tendons themselves.

Seventh. The difficulty of the cure of varus and valgus depends upon the age of the individual, and the degree of the deformity. The cure requires practice and the well conducted application of proper instruments.

Dr. Krauss stated that he has lately divided, in a case of very deformed varus, in an individual of 22 years of age, the tendon of the tibialis posticus muscle, and the contracted plantar ligament, which latter operation, he believes, has not yet been performed either in France or in Germany. The operation was not followed by inflammation, and the improvement of the shape of the foot was very decided. —*Lancet*, for May 26, 1838.

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43. *Spermatocele, or Varicocele of the Spermatic Cord.*—We find in a late number of *Guy's Hospital Reports*, (April, 1838,) some very interesting remarks on this subject by Sir Astley Cooper.

In general this affection produces only inconvenience to the patient, and the plan of treatment then consists in supporting the part; and Sir Astley recommends that this be "effected by applying a suspensory sling, with two tapes sufficiently long to encircle the abdomen. The sling receives the scrotum and testis; and the tapes, passed around the abdomen, and tied in front, secure the parts in an elevated position. No straps should be placed beneath, to pass between the thighs; as they draw back, rather than elevate, the scrotum and swelling.

"As the parts should be kept as cool as possible, the material of the sling should be an open *silk net*, which allows the escape of heat, and prevents a relaxing perspiration. From this support the patient derives great relief; and the application of an evaporating lotion of spirits-of-wine and water relieves him still more. A very good lotion for this purpose consists of aluminis ʒi. aquæ ℥xi. spiritus vini ℥i.; but the lotion should be as much as possible devoid of smell, as it leads to the suspicion of some infirmity.

"Washing two or three times a day with cold water, with salt dissolved in it, is useful; and the employment of the shower-bath, or common cold-bath, by constringing the scrotum, prevents the increase of the complaint.

"The dress should be as light as possible, to prevent the production of superfluous heat, and to permit its escape; and all tight dress around the abdomen is to be avoided, to allow of the free return of the venous blood from the testis. Still, however, these means leave the patient with the badge of his infirmity, from his continuing to wear his bandage; and attempts have been made to relieve him, by exciting inflammation and thickening of the scrotum, and thus to render it a better support to the testes. I have applied the pyroligneous acid for this purpose; but the pain which it excited was severe, and the good effect only temporary. I have also employed blisters with the same view, and with the same effect.

"It has been advised to draw the scrotum through a ring, and fix it there, the person continuing to wear it; but, as it may be readily believed, this has no advantage over the use of the sling-support; and is a much greater annoyance to the patient's feelings, either than the disease itself, or the bandage which he is usually called upon to wear."

There are cases, however, in which this complaint produces so much pain and distress, as to render it absolutely necessary to do something more than is generally advised. Sir Astley has seen, in the course of his practice, many persons suffer so severely in mind and body from it, that they would readily submit to any operation which was not attended with danger to life, to obtain relief. As to tying the veins of the spermatic cord—from what he has seen of the dangerous and destructive effect of exciting inflammation in veins—he should never propose it; nor does he think, if it were not dangerous, that it is founded on proper principles. But in his Work on the Testis, published in the year 1830, he has advised the removal of a portion of the scrotum, in the following words:—

"*The removal of a portion of the scrotum will lead to a diminution of the veins of the spermatic cord; and it is an operation, in an extreme enlargement accompanied with pain, which might be tried with perfect safety, and is very likely to succeed.*"

He had, at that time, never performed the operation, and he therefore spoke of the probability of success only: but, aware of its being free from danger, and seeing that it would render the remaining portion of the scrotum a natural bandage,

and that a great degree of relaxation of the scrotum also attended this complaint, and that such relaxed portion might be safely and effectually removed, he determined to take some opportunity of performing the operation.

"Beside the advantage of making the scrotum, in its lessened state, a means of support, he observes, it must naturally occur, that the adhesion, excited by the operation of the fascia which covers the cremaster, to the surrounding parts would produce a permanent support, and render a suspensory bandage unnecessary. It might be thought a painful operation; but it is not so, nor does it excite constitutional irritation.

"The mode of performing it is as follows:—The patient being placed in the recumbent posture, the relaxed scrotum is drawn between the fingers; the testis is to be raised to the external ring by an assistant; and then the portion of the scrotum is removed by the knife or knife-scissors;—but I prefer the former. Any artery of the scrotum which bleeds is to be tied; and a suture is then made, to bring the edges of the diminished scrotum together. The patient should be kept for a few hours in the recumbent posture, to prevent any tendency to bleeding; and then a suspensory bag is to be applied, to press the testis upwards, and to glue the scrotum to the surface.

"The only difficulty, in the operation of removing the scrotum by excision, is in ascertaining the proper quantity to be removed; but it adds but little to the pain if a second portion be taken away, if the first does not make sufficient pressure on the spermatic cord. It is of no use to remove a small portion of the scrotum, for from doing this I have failed. When the wound has healed, the varicocele is lessened, but not always entirely removed; but the pain and distressing sensations cease, if sufficient of the scrotum be removed.

"In making the suture in the scrotum, its lower part is to be brought up towards the abdominal ring, to raise and support the testis; as does the suspensory sling when it is worn."

The following cases are given in which this operation was performed.

"Case I. Mr. Rees, surgeon, of Blackfriars Road, sent me a patient of his, who had a large varicocele on the left side, with a very relaxed scrotum. He suffered severely from uneasiness in the spermatic cord and in the loins, a sense of weight and oppression in the region of the stomach, and excessive mental depression. On the 18th of February, 1831, I removed a large portion of the scrotum; and exposed the fascia covering the cremaster, and the testis in its envelopes. By three sutures, the edges of the scrotum were approximated, and the wound quickly healed; and he, on the 3d of March afterwards, quitted London."

This gentleman was 32 years of age. The portion of scrotum removed, when extended, measured four inches in length; and in breadth, in the middle, two inches and a half. He left London quite well, and some time afterwards Sir Astley learned from Mr. Webster that the patient was able to ride fifty miles a day, without inconvenience.

"Case II. Mr. S——, aged 20, has had a spermatocele three years and a half, attended with a great sense of uneasiness in the part, and a dull heavy pain in the spermatic cord and loin on that side. My assistant, Mr. Balderson, held the scrotum between his fingers; and I removed all that could be easily elevated from the testis and its coverings, which are necessarily exposed in the operation. I then brought the integuments together by sutures, so as to close the wound completely; but I previously secured some small bleeding arteries. He was ordered to keep himself cool, and to remain in the recumbent posture; and the part was placed in a suspensory sling: however, the next morning he went down to breakfast; but this imprudence did not prevent his quick recovery from the operation, with the result of which he was highly pleased. The varicose veins are greatly reduced: the coverings of the testis adhere to the upper part of the scrotum. He soon gave up the use of the sling-support; and lost the pain in the spermatic cord and loins, which he had previously sustained.

"Case III. H. B., aged 18 years, had a spermatocele upon the left side, from the age of fourteen. At fifteen he fell across an iron bar, which greatly hurt him; and he thought the complaint had quickly increased after that time. He suffered much from pain in the testis, more especially in walking, and from uneasiness in the groin, spermatic cord, and the spinous process of the ilium and loins. He consulted several medical men, who told him his complaint was a hernia. But

he was then recommended to Mr. Taunton, in Hatton Garden; who informed him it was a varicocele: and the scrotum was directed to be supported, and an evaporating lotion to be used.

"On July 20, 1837, I removed a large portion of the relaxed scrotum which covered the swelling, in the presence of Mr. James Babington; secured some small arteries; and then used four sutures, to approximate the edges of the scrotum. He was sent from my house, in a coach, to Chelsea, after the operation; and the scrotum very soon healed, and the uneasy sensation in the part vanished.

"Case IV. Mr. John K——, aged 25, four months ago found the scrotum enlarged on the left side, with occasional pain in the part, which darted upwards to the external abdominal ring. It gradually increased, until it was three times larger than the right side of the scrotum, became more painful, and occasioned much depression of spirits. On the 15th of October, 1837, I removed a portion of the scrotum, by passing a needle and thread through it in three different places, and cutting away the scrotum beyond them. This plan did not facilitate the operation, and made the tying of the arteries more difficult; but it succeeded in relieving the disease."

A case is also given, communicated by Mr. Key.

In one case Sir Astley raised the scrotum, and placed a ligature around the part which he designed to remove, drawing the thread quite tight: but it produced a great deal of pain; the part sloughed with considerable constitutional irritation, and after a great length of time, and with more suffering than the complaint justifies.

It must be distinctly understood that the removal of a portion of the scrotum is recommended in those cases only of spermatocele, in which the patient suffers great local pain; in cases in which he is most urgent to have the swelling and deformity of the part removed; and more especially in those instances in which the function of digestion suffers, and there is a great degree of nervousness and of mental depression. For slighter cases, a suspensory bandage must be still recommended.

OPHTHALMOLOGY.

44. *On a new means of Diagnosis between Amaurosis and Cataract.* By M. Sanson.—If a light be presented before an amaurotic eye—the pupil of which is either naturally or artificially dilated—three distinct images of the flame may be invariably observed. Of these three images two are upright, and one is *reversed:* they are situated, the one behind the other, in the following order. The anterior one, which is also most distinct, is one of the former or *upright* images. The posterior or deepest, which is the least distinct, is also one of the upright images. The intermediate image is the *reversed* one.

This last or reversed image is paler than the first, but brighter than the second, upright one; and it also differs in this circumstance, that, when the light is moved to either side or round the eye, it is separated from the other two images so as always to occupy the opposite side, while they (the upright ones) are seen to follow the position of the light, moving to the right or left, upwards or downwards, according as the candle is moved in any of these directions.

If the candle be held opposite to the axis of the eye, all the three images are situated one behind the other—the two posterior ones being, as a matter of course, masked and obscured by the anterior one. But if it be held to a—say the right—side, then the reversed image will be seen in the opposite or left angle of the eye, while the upright ones are seen at its right angle.

If it be moved around the eye, the upright images follow it together, while the reversed image, although describing the circle in the same direction, is always at the opposite end of the eye's diameter.

The unpractised observer may experience some difficulty in observing these phenomena.

The patient should be placed in a dark chamber; and let us suppose that the candle is held at the external angle of the eye: the anterior upright image, which is large and brilliant, will be observed at the outer and upper part of the pupil. If

we now look very attentively into the bottom of the eye, the reversed image will be seen at about one line's breadth from the preceding upright image, and at the meeting of the lower with the middle third of the diameter of the pupil—the right extremity of which (the diameter) is occupied with the anterior upright image.

If the surgeon does not detect these phenomena at first, he has only to move the light upwards and downwards, once or twice, fixing his look steadily on the pupil, and he cannot fail to observe that one image rises and the other descends.

As to the posterior or deep-seated upright image, it is always very difficult to perceive it, in consequence of its paleness, and of the intervention of the other upright one—of which it looks like the shadow.

M. Sanson assures the surgeon that, when once they have detected the very images, they will always readily perceive them afterwards, *provided there be no obscurity or opacity of the lens.*

Whenever a cataract exists, no matter what may be the stage or progress of the disease, none of the images, described above, are ever perceptible.

Some time ago (says M. Sanson,) a patient was sent to me from a great distance to be relieved by operation from a cataract: *the three images were perceived; the patient was affected with glaucoma.*

A few days ago I was desired to visit a patient, who had been pronounced by several medical men in the metropolis to be affected with cataract: I perceived the three images and declared the case to be one of amaurosis.

A woman, whose sight was entirely lost, was lately sent to my care as an amaurotic patient. There was no opacity visible in the field of the pupil; but two of the images were absent. I gave it as my opinion that she had two cataracts; and the accuracy of this diagnosis has been subsequently confirmed.

The preceding remarks were made by M. Sanson, one of the surgeons of the Hôtel Dieu in Paris, in his course of lectures on ophthalmology during last year. He had first noticed the phenomena, described above, about twelve months previously; and he had availed himself of his ample opportunities in the hospital during this period to test the accuracy of his opinion. He assures us that his experience has quite satisfied him of its truth.—*Med. Chirug. Rev.*, from *l'Experience; Journal de Med. et Chirurg.*

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45. *Xerophthalmia.*—The following well marked example of this rare disease is recorded, by M. Velpeau, in the *Gazette Médicale de Paris.* A young man, of a robust, although somewhat scrofulous constitution, had, twelve months before his admission into the hospital, suffered from inflammation of the right eye. An abscess formed at the time under the upper eyelid, and gave discharge to a quantity of pus from its inner surface. When this discharge ceased, the patient began to experience dull pains at the external part of the eye, also a gradual diminution of the lachrymal secretion and dimness of vision.

Various means were used, but without effect; and the surface of the cornea became quite dry, and the sight most indistinct.

When admitted into the hospital, it was observed that his right upper eyelid was somewhat inverted, and could not be elevated so much as the left one. The orifices of the meibomian glands and of the inferior lachrymal punctum were quite obliterated.

The caruncula lachrymalis was observed to be smaller than that of the other side, and imbedded in a triangular fold of the conjunctiva. This membrane presented a dull white colour, and was perfectly dry.

At both angles of the eye, it exhibited several vertical folds, which seemed to be more distinct and numerous in consequence of the efforts which the patient had made to separate the eyelids as much as possible.

When the eye-ball was drawn into the socket, the lower segment of the cornea seemed to be tied by one of these folds, as by the *membrana nictitans* in birds. The surface of the cornea itself was invested with a pulverulent pellicle, which was dry and unequally opaque. Through it, as through a cloud, the iris and pupil might be perceived. In short, the eye looked like the dry, dull and withered eye of a corpse, which had been exposed for a day or two to the action of the air; only with this exception, that it was not at all sunk in the socket. The patient had found that his sight was always clearer, if he moistened the surface

of the cornea with water. When a solution of nitrate of silver (five grains to an ounce) was dropped into the eye, the patient experienced scarcely any pain or uneasiness.

The left eye was quite sound and had not suffered at all from any sympathetic influence with its fellow.

The treatment of Xerophthalmia or Xerosis has been hitherto utterly unsatisfactory. M. Villards has reported one case successfully treated by touching the conjunctiva around the edge of the cornea with the solid nitrate of silver; and M. Sanson has recommended the excision of the conjunctiva in the same place. M. Velpeau tried, in the present case, the solution of the lunar caustic and also the insufflation of calomel, but without having obtained any decided benefit.

The rare disease of Xerophthalmia has been strangely confounded by some authors with some kinds of opacity of the cornea. The two affections are altogether different from each other. In the former, the lamellar tissue of the cornea appears to be sound; and it is only the conjunctival epithelium investing it, which becomes dry, thickened, opaque, and, as it were, converted into epidermis. It has a slatey hue, is pulverulent, and is of a bedimmed transparency which impairs, without abolishing, the visual functions. On the other hand, leucoma, albugo, &c. are diseases of the cornea itself; the opacity in them is much more decided, and, if situated over the axis of vision, it is attended with an almost total blindness.

With respect to the causes of Xerophthalmia, we have no satisfactory information. Schmidt, Travers, and others attribute the disease to an obliteration, more or less complete, of the excretory ducts of the lachrymal gland. But this assertion is quite gratuitous. These alleged ducts have never been shown; no necroscopic examination of a "xerosed" eye has ever been made; and lastly M. Magendie has found that the extirpation of the lachrymal gland in the lower animals is not followed by desiccation of the cornea—its transparency and humidity being probably maintained by the mucous secretion from the papillæ of the conjunctiva, from the Meibomian gland, and from the caruncula lachrymalis. May not the disease be owing to an affection of the ophthalmic branch of the trigeminus nerve—the nerve which Magendie believes to be the almost exclusive conductor of sensibility of the organs of sense. The diminution of vision and of the sensibility of the conjunctiva, the imperfect and embarrassed movements of the eyelids, and the cessation of the lachrymal secretion—all these phenomena may, perhaps, be explained on this hypothesis. Whether the formation of the abscess in the upper eyelid had any influence in inducing the Xerophthalmia in the preceding case, is not easily determined. If it had, some will allege that the lachrymal gland itself was implicated, and others perhaps may suppose that the frontal nerve suffered from its contiguity to the abscess, and that the other branches of the ophthalmic became affected from sympathy.

On the whole we are rather inclined to attribute the origin of this rare disease to the effects of chronic catarrho-strumous conjunctivitis, than to any other morbid state with which we are acquainted.—*Ibid.*

MIDWIFERY.

46. *Case of Ruptured Uterus.* By Dr. Naegelé, Jr.—A healthy peasant woman, ætat 35, of middle size, and delicately formed, mother of four children, and in the latter half of her pregnancy, (she reckoned that she had still six weeks to go,) received a violent blow on the abdomen from the pole of a wagon. She felt at the moment a severe tearing pain, and was thrown down with considerable force, but managed to creep a little way from the wagon, where her husband found her, and conveyed her home to bed in a fainting state. On coming a little to herself, she complained of a constant bearing-down pain in the abdomen, which prevented sleep during the night; but she had no return of the fainting. Besides the above symptoms, Dr. N. found her with a flushed face; pulse 90, full and sharp; the bowels had been only once moved after several injections; she could pass water, but it produced pain and scalding. The abdomen was slightly tympanitic, but not tense. Between the umbilicus and pubes, somewhat to the

left, a round circumscribed tumour was to be felt, rising in the middle to the height of an inch and a half, but flattened off towards the sides, and about six inches in diameter. The parietes were unchanged, except that there was a small circular bruise. Beneath the integuments covering this tumour, the nates and foot of a fœtus could be felt with the greatest distinctness, over which they were easily moved. She complained of pain on motion or on pressing the tumour. On pressing his hand deeper into the abdominal parietes above the navel, Dr. N. fancied he could feel the fundus uteri. Examination per vaginam presented nothing unusual. The head presented naturally, and neither blood nor water had come away from the vagina; she had no pains, nor were there any signs of incipient labour. The movements of the child, which had been very brisk before the accident, had ceased immediately after; and this was moreover confirmed by auscultation. The alarming symptoms which are usually observed in cases of ruptured uterus were entirely absent: nevertheless, the nature of the accident, the peculiar character of the above-mentioned swelling, and the distinctness with which the parts of the child could be felt immediately beneath the abdominal parietes, were strongly in proof of the uterus having been ruptured.

Under the existing circumstances, Dr. Naegelé considered that neither gastrotomy nor artificial delivery *per vias naturales* were indicated; as, in the first case, the child was evidently dead, and, in the second, there was not even a trace of commencing labour: he therefore contented himself with bleeding her to fourteen ounces, on account of the pain of head and state of the pulse, enjoined strict quiet, and requested the midwife (who was the only medical attendant in the village,) to send for him as soon as labour made its appearance. On the following day, the report was that no change had taken place, except that a cough, to which she had been many years subject, had increased, and aggravated the pain of the abdomen. Some dec. alth. and ext. hyosc. were ordered, and several days passed without hearing of her. "On the 5th of July," says Dr. N., "a messenger at length arrived at midnight, with the information that pains had come on the day before, in the forenoon, and that she had been partly delivered of a putrid fœtus in the afternoon; but, as it was not entirely expelled, my assistance was required. I arrived at four in the morning, and learned from the midwife that the os uteri had gradually dilated, the head had descended lower into the pelvis, and had at length been expelled; but, strange to say, no bladder of membranes had formed, nor had a drop of liquor amnii come away during the labour; that, when the fœtus was delivered as far as the breast, it had there stuck, and, on her pulling at the body, it had given way in the vicinity of the lumbar vertebræ, leaving the rest behind. The placenta had passed of itself, without any serious discharge. On examining the portion of the child which had been expelled, and which was in a high state of putrefaction, I found everything as she had described. The unfortunate patient lay without motion in her bed, with well-marked signs of metritis: the face betrayed the peculiar and painful expression of suffering which is so constantly observed in severe uterine disease; the anxious countenance; confusion of mind; the pulse from 110 to 120, somewhat hard and tense; the skin dry and rough; the temperature of the abdomen increased, but the extremities cool; tongue dry, thirst and nausea; the bowels had been relieved by an enema, and she had passed water; the breasts were flaccid, and there were no traces of lochia. The abdomen was more distended than before, but the tumour itself had diminished; the parts of the child were less evident, but the nates and a foot could still be distinguished. The slightest touch produced insupportable suffering." On passing his whole hand into the vagina, the temperature of which was much increased, Dr. N. found the os uteri externum very high up and directed backwards: it was sufficiently open to admit two fingers. A leg of the child projected into the vagina, round which, at the knee-joint, the os uteri internum was firmly contracted. Repeated attempts were made to extract the foot, without success; for, besides the firmness with which the os uteri was contracted, the putrid state of the extremity prevented any firm hold being applied, and only produced the severest sufferings. In the hopes of relaxing the os uteri, she was bled to sixteen ounces, but without effect: the leg was therefore removed at the knee, warm fomentations were applied to the abdomen, strict quiet enjoined, with general antiphlogistic treatment and attention to the bowels.

No further news of the patient was received until the 10th of July, when Dr.

N. was informed that she had been in severe suffering for two days previously; that the tumour had inflamed, and burst on the 8th; that a foot had protruded, at which the midwife had pulled until the whole remaining portion had been removed, and that the opening was very large.

Dr. N. saw her again on the 14th. The portion of the child which had been expelled from the abdominal tumour was examined, and was found to consist of the pelvis, with the entire lower extremity of one side and the thigh of the other. "To our astonishment," says Dr. Naegelé, "we found the patient, who, at our last visit, we thought could scarcely survive twenty-four hours, in a very comfortable state. There was but little fever, the pulse was about 90, thirst moderate, appetite tolerably good, strength improved; her only complaint was that she did not sleep; there was no trace of lochia, and but little milk in the breast. In the place of the abdominal tumour was a round circumscribed opening in the fleshy wall of the abdomen, of about five inches in diameter, from which a quantity of mucus was discharged, and about an inch and a half in depth. On the right, the whole thickness of the abdominal wall was as if it had been cut through with a knife, beneath which the finger could be introduced for some extent: on the left side of the opening was a red globular mass, which had united with the abdominal integuments, and which appeared to be the uterus, as it rose distinctly when the lower portion of the uterus was pressed upwards by the finger per vaginam. Inferiorly, the finger was stopped by the adhesions which had formed in all directions at the bottom of the abscess; on the right side, a portion of intestine was visible. The wound was covered with simple dressing, and above this with a poultice; bark was ordered, with a mild but nourishing diet, and directions were given for ensuring proper relief in the bowels.

On the 19th July, the opening had diminished to a third; the portion of intestine, as also the red coloured mass, had retracted somewhat; there was a free discharge of healthy pus; she was perfectly free from suffering, except that one of the inguinal glands had inflamed and suppurated, causing her a good deal of pain. The simple treatment, as above mentioned, was continued, and a poultice applied to the groin; a more nourishing diet was also directed to be used. The abscess burst in due time, the strength continued to improve, and, when we visited her on the 17th of August, Dr. N. found the opening of the abdomen entirely closed, leaving merely a small scar.

Her health and strength continued to improve, and the catamenia returned on the 12th of August.—*B. and F. Med. Rev.* from *Neue Zeitschrift für Geburtskunde.* Vol. V.

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47. *On Extra-uterine Pregnancy.* By J. E. Dezeimeris, M. D.—Respecting the seat of this abnormal conception, ten varieties are enumerated:—1st. Ovarian pregnancy. 2nd. Sub-peritoneo-pelvic. 3d. Tubo-ovarian. 4th. Tubar. 5th. Tubo-abdominal. 6th. Tubo-utero-interstitial. 7th. Utero-interstitial. 8th. Utero-tubar. 9th. Utero-tubo-abdominal. 10th. Abdominal; primitive secondary. M. Dezeimeris raises, *in limine*, the question of the possibility or impossibility of ovarian pregnancy. MM. Prevost and Dumas have proved the important office of the spermatic animalculæ in the act of fecundation, but not that their actual introduction into the ovule is necessary to vivification; nor yet that these animalculæ, imprisoned in the cavity of the womb, wait there for the descent of an ovule. On the contrary, tubal pregnancies are incontestable and uncontested; and, as it is not to be supposed that the fœtus developed in the tube had been fecundated in the womb, and had thence reascended to its narrow abode, so must its vivification in the fallopian tube be admitted by all. This first step being gained, the succeeding will be made with comparative facility. Even those who deny the possibility of impregnation taking place while the ovule is yet enveloped by the investment of the ovaries, must yet admit some vivifying influence that induces the ovule to burst its boundary walls and descend through the tube. Of the second variety are cited two cases where a fœtus was found between the layers of the broad ligaments, one of them dissected by Professor Lobstein. Among all the cases upon record of utero-interstitial pregnancy, the most valuable for the authenticity of its details is that communicated by Dance to M. Breschet. It is evident in this case that the pregnancy was really and purely interstitial, that is, without the participation of the fallopian tube *in* the wall of the cyst containing

the fœtus; the tube, in traversing the uterus, was connected with the wall of the cyst, and presented in one point an opening, which was indeed taken for a rupture made in detaching the placenta, but whose existence more probably preceded the passage of the fœtus into the substance of the uterus. This circumstance of the case conducts us by insensible gradations from the tubo-utero-interstitial pregnancy to the simple interstitial, whose locality is more distant from the tube, and very much diminishes the mystery with which some have invested this state of parts.

Primitive abdominal pregnancy is interesting only as shewing upon what parts the fœtus is ingrafted, and how it supplies itself with the necessary quantity of blood. Secondary abdominal pregnancy involves the discussion, whether, as M. Guillemot states, some cases of normal gestation may not thus terminate, in consequence of rupture of the walls of the uterus: in either case, if the immediate danger be surmounted, the mother may sustain her unborn offspring for an unlimited period in this new condition.

Pathological Anatomy of the Extra-uterine Fœtation. In these cases the embryo generally retains its proper membranes, viz: the chorion and amnios, and also the placenta, if it has survived the first days of its existence: the placenta is larger than natural, thin, furnished with very small vessels; circumstances induced by the difficulty of obtaining an adequate supply of blood from the neighbouring organs. In the primitive abdominal pregnancy, there is rarely an enveloping cyst that can be considered analogous to the caducus; owing, no doubt, to the trifling inflammation produced in the first instance by the presence, in the cavity, of the peritoneum, of so small a body. In the secondary form this cyst is always found, being indeed as necessary a consequence in this case as its absence was to be anticipated in the last: for, whether the fœtus be disengaged into the abdominal cavity, by rupture of its envelope, as a tubal, ovarian, or other gestation, or by rupture of the uterine walls, the presence of so large a foreign body could not but excite inflammation, the glueing together of the neighbouring organs, and thus at last a perfect cyst. As to the fœtus itself, 1, a remarkable developement of the osseous system has been observed in some instances, as well as the presence of several teeth; 2, a putrid state of the fœtus, the bones of which made their exit from the body by different routes; 3, a dessicated or mummified condition; and, 4, its transformation into a chalky mass, into amazone, or into bone. Examples of monsters in these situations are rare.

Of the Mother. The normal change in the size and vascularity of the uterus, its gradual diminution and return to the condition of vacuity, as well as the formation of the membrana decidua, are attested by cases. The secretion of milk and the menstruation obey the usual laws of natural gestation: most uneasiness to the mother is occasioned by tubal and utero-interstitial fœtation: this condition offers no material obstacle to natural gestation and delivery. At the expiration of the ordinary period, childbed pains supervene, and last some days, and are often renewed at pretty regular intervals as long as the pregnancy continues. *B. and F. Med. Rev.* from *Journal des Connaiss. Med. Chir., Jan.* 1837.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

48. *Unconscious Delivery.* By M. Leonhard.—The following case is related chiefly as of importance in a medico-legal point of view, in its bearings on the following questions: 1. Whether a female may entirely mistake the nearness of delivery? 2. Whether she places herself unintentionally in a place unfitted for delivery? 3. Whether, whilst the pregnant woman is fully possessed of consciousness, a delivery, of which she is unconscious, may take place?

Mrs. K—, aged thirty-seven, the mother of six living children, and having thrice miscarried, became pregnant for the tenth time, and calculated the term of her pregnancy during the first fortnight of May. Early in March she was exposed to the contagion of small-pox, and acquired the disease in a very violent form. A laxative clyster had been ordered on account of constipation of three days' continuance; but it was not administered, as, during the afternoon, the patient complained of a disposition to evacuate the bowels. She was raised upon the night-

stool, and became suddenly and at once freed from this constipation. She remained, however, for a quarter of an hour in the same situation, because she continued to feel some desire to evacuate fæces, of which but a small quantity was passed. As she began to feel very faint, she was returning to bed, when, greatly to her astonishment, she found herself connected by a band with the night-stool, which she could not separate. This was discovered by an attendant to be connected with a child, which began to cry on being withdrawn from the bloody water. The female, who had given birth previously to six children, could scarcely trust her eyes. *She had been entirely unconscious of what had preceded delivery, and had throughout perceived no indications of it.* The child was separated from the navel string, and the woman returned to bed. She died suddenly in about half an hour afterwards. The uterus had contracted; the secundines were loose in the vagina; that portion of umbilical cord which remained attached to it about an ell long. The child was a female, and appeared fully formed. From these observations, made in the case of a sensible and honest woman, and in the presence of several witnesses, the questions given in the first part of this paper may be answered thus: that a pregnant female, even though she has frequently borne children previously, may entirely mistake the approach of delivery,—may be unintentionally surprised in a situation and in circumstances the most inappropriate for it,—and may, even though quite conscious, be unconscious of the birth of her offspring. The importance of this case in some questions respecting illegitimate pregnancy, is evident to all.—*Ibid.* from *Medicinische Zeitung*, No. 24. 1837.

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49. *Relative altitudes of the insertion of the Umbilical Cord as furnishing data for determining the age of the Fœtus.*—Prof. Moreau, of Paris, has carefully measured the bodies of five hundred children born at Maternité, and found of this number only four in which the umbilical cord was inserted exactly in the middle of the body; in the remainder the point of insertion was on an average from eight to nine lines below the middle,—in a few children, born about the sixth and eighth months, the cord was inserted into the middle point.

These results, it will be perceived, are at variance with those obtained by Prof. Chaussier, who examined the subject some years since with considerable care, and which have hitherto been received as authority.—*Lancette Francaise*, No. 160. 1837.

CHEMISTRY AND PHARMACY.

50. *Adulteration of Iodide of Potassium with Carbonate of Potassium.*—A faint contamination of this nature is exceedingly common, because it can with difficulty be avoided in the manufacture of the salt; but Dr. Christison says he has examined specimens, where the carbonate with its accompanying water amounted to ninety parts in the hundred. This distinguished writer may well ask, "can we wonder, then, that practitioners should complain of the iodide of potassium, that they have given it for months, nay, even for years, without observing any effect either on the constitution, or on the disease for which it was administered?"—*Edinburgh Med. and Surg. Journal*, April, 1838.

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51. *Adulteration of Scammony.*—Pure scammony, which possesses a pretty clear resinous fracture, is composed, according to the analyses of Prof. Christison, of resin, gum, a few grains of sandy matter, and a little moisture. The gum amounts to 8 per cent., and the resin, its active principle, varies from 77 to 83 per cent., according to the age and consequent dryness of the specimen. Such scammony has for some years cost in the Edinburgh wholesale market, Dr. Christison states, about thirty-two shillings a pound; but it is rarely to be met with. The principal part of the scammony in the shops costs only from fourteen to eighteen shillings a pound; which is alone evidence enough that it is a spurious article. Three adulterations have come under my notice,—with chalk, with some amylaceous matter, and with both conjoined. The first variety has very much the appearance of our grey limestones. I may mention the composition of one merely out of a great number I have analyzed. It contained 31.5 per cent. of carbonate

of lime, more sandy impurities than usual, and only 43.5 per cent. of its active principle, the resin. The next variety, which may be called amylaceous scammony, presents a variable proportion of fecula, and along with this a less proportion of a principle corresponding in properties with lignin. Of several specimens of this kind I have examined, there is one which contained 20 per cent. of fecula, and about 10 of lignin; and its active resin formed only 37 per cent., being less than one-half of that of the genuine drug. This adulteration is not materially different from that indicated by Dioscorides; who says that the makers of scammony mixed with it the 'οροβινον αλευρον, the flour of a species of pulse, believed on the authority of Sibthorpe to be the *Ervum ervilia*, or bitter vetch. The amylaceous scammony presents commonly an ash-grey colour, and generally a waxy, but at times a somewhat resinous lustre. The last adulteration of importance is with fecula and carbonate of lime together. The appearance of this sort is much the same with that of the last. Frequently where there is a large quantity of chalk, I have found about 4 per cent. of fecula, for the presence of which it is not very easy to account; but often also the proportion is much larger. In one specimen I have found 18.5 per cent. of carbonate of lime, and about 17 of fecula and lignin; and the resin amounted to 42.5 per cent. Now, all these spurious samples, containing only about half the active ingredient of the pure drug, were considered to be fair average specimens of the scammony of the English market. It need scarcely be added, that the compound colocynth pill made with pure scammony, instead of the common article of the shops, is very different in power from the pill usually met with. It has appeared to me, as we should expect, about twice as strong."—*Ibid.*

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52. *New process for covering pills with Gelatine.*—M. Garot describes, in the *Journal de Pharmacie* (Feb. 1838), the following process devised by himself, by means of which, pills of every kind may be enveloped in a covering of gelatine, and thus administered without the odour or taste being perceptible. The pills having been made of the desired size, are placed upon the point of a pin—M. G. uses long, very slender, black pins. Purified gelatin is then melted with a moderate heat, care being taken to add a little water, so that in cooling it becomes a very consistent jelly; two or three drachms of water are usually sufficient for an ounce of gelatine. When the gelatine is dissolved, it is kept in this state in a water bath, otherwise a pelicle will form on its surface, which impedes the operation. Things being thus arranged each pill is dipt into the melted gelatine, and then withdrawn with a rotatory motion, and the pin then stuck in a paste or pincushion, so that the pill is exposed to the air. After fifty pills have been covered in this way, the opening formed by the pin is to be closed. This is effected by holding the pin horizontally in one hand, the pill being held in the other, and exposing the pin to a candle, the heat melts the gelatine, and on separating carefully the pin from the pill the small opening closes. By this method two hundred pills may be covered in an hour by any one that has the least skill in manipulation. What is remarkable is that the same gelatine will answer for covering pills of different kinds, as assafœtida, copaiba, &c., the gelatine in which the pills are immersed not preserving the odour of the substance plunged in it.

MEDICAL STATISTICS.

53. *Great Mortality of Foundlings brought up by hand.*—M. L'Abbe Gaillard, in his *Recherches sur les enfans trouves*, states that at Parthenay, where the foundlings are suckled, the mortality was 35 per cent. the first year, whilst at X——, where the children are equally well attended to, but are brought up by hand, the mortality the first year was 80 per cent.; of 655 children received at this last hospital only 60 lived twelve years. The greater number of deaths at X——, took place the first month after birth; and the mortality was at a maximum in autumn, a fact confirmed by many years observation at X——, and other establishments, where the children are are not supplied with natural food:—

Months.	*Births.*	*Deaths, 0—30 days.*
December	17	7
January	16	5
February	28	3
March	23	9
April	20	6
May	18	7
June	18	3
July	18	10
August	30	26
September	7	4
October	29	22
November	20	14

From this table it appears that of 244 children brought to the hospice in five years, 116 died in the course of the first month = 48 per cent.; that of 123 children born between January and June, 33 died in the first month; while 83 died out of 121, born between July and December. In the first months of the year the mortality was 27, in the last six months 67 per cent.; of 100 children born between January and June, 73 survived the first month; between July and December only 31 survived.

The mortality is raised by extreme cold; in November and December, 1829, out of 29 children admitted, 19 died in the first month after admission; in July and August of the same year 11 died in the first month out of 25 admitted.

These facts show very decidedly the evil consequences of denying infants their natural food, and furnish another argument against the fatal practices of those heartless mothers who abandon, or refuse to suckle their own offspring.

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54. *On the mortality and sickness of Soldiers.*—The *Lancet* of 28th April last contains some extremely interesting observations on this subject by T.R. Edmonds, Esq. The sources of inefficiency of an active army are very imperfectly understood; the lists of the killed and wounded are commonly supposed to comprise nearly the whole losses of an army; its numerical strength is commonly supposed to represent its real and effective strength; the deaths and the sickness caused by disease, fatigue, or privation, are generally passed over as insignificant. Few people appear to be acquainted with the fact, that in a long campaign the deaths through fatigue, insufficient nourishment, and exposure to cold, are much more numerous than the deaths caused by battle. Another important fact, not generally known, is, that in a long campaign one fourth part of the army is, at most times, disabled by sickness and unfit for duty.

Mr. Edmonds having been allowed access to the official monthly returns of the living, sick and dying of the British army, has taken advantage of the opportunity to institute some investigations, with the view of determining, 1st, the total loss of life (whether from disease or from battle) incurred by the peninsular army in a given time, distinguishing officers from private soldiers. 2nd, to determine the average proportion of the army constantly sick; the proportion killed in different battles, and the proportion wounded, as well of officers as of privates, and the relative mortality, in the same battles, of officers of different ranks and arms.

During the last 41 months of the peninsula war, or from the 25th Dec., 1810, to the 25th May, 1814, the total deaths of private soldiers of the army amounted to 33,829, or 825 per month; the total deaths of officers in the same time amounted to 940, or 23 per month. The average numbers living during this period, derived from 41 monthly musters, were 61,511 privates, and 2716 officers; consequently, the annual average rates of mortality during this period were 16.1 per cent. for privates, and 10.1 per cent. for officers;* that is, the total mortality of privates was more than 50 per cent. greater than that of officers.

On comparing the mortality of officers and privates, at different seasons of the year, it is found that the excess in the mortality of privates exists only during the winter, the season generally passed by the army in cantonments; during the summer (25th March to 25th Sept.) there is no sensible difference between the mor-

* These rates coincide with the rates, during peace, of English officers and privates in Jamaica.

tality of officers and that of privates; during each of three summers, the deaths of officers were, to the deaths of privates, in the proportion of 1 to 25 nearly; during each of two winters, the proportion became that of 1 to 70; in the third winter an exception occurs, and the proportion coincided with the average for the year; it is accounted for by the army having kept the field during this winter, contrary to the usual custom. During the 41 months, the total deaths of officers were, to the total deaths of privates, in the proportion of 1 to 36; there was living, at the same time, one officer (including non-combatants) to 22½ privates, or one combatting officer to 25½ privates.

During the months in which battles were fought, the mortality of officers, Mr. Edmonds found, was always high relatively to the privates. Thus the greatest number of deaths of officers occurred in the month of April, 1812, corresponding to the siege of Badajoz. In the same month there died 1311 privates; so that there were only 17 deaths of privates to one death of officers, which is less than one-half of the general average. A similarly high relative and absolute mortality of officers, is observable during the months in which the battles of Fuentes d'Onor, Salamanca, Vittoria, Pyrennees, and Toulouse were fought. Since the greater number of battles are fought during the summer, the higher relative mortality of officers to privates in summer than in winter, may be considered as accounted for by battles being proportionally more destructive to officers than privates. The number of deaths of officers during any month, is generally indicative of the quantity of fighting during that month; but the number of deaths of privates is of very little value in this respect. The deaths of privates are, in several instances, as numerous during months in which there was no battle, as during months in which important battles were fought.

In battle there is a great difference between the mortalities of officers of different ranks. Field-officers and captains suffer much more severely than lieutenants, who again suffer more severely than ensigns. The mortality of captains from battle is double that of ensigns. It seems probable that this difference in the mortality is dependant upon the difference in the age of the parties, the juniors being more likely to survive a given wound than their seniors. Perhaps, however, the relative positions occupied in battle by officers of different ranks may cause the differences in the mortalities. A captain, in order to set a good example to his company, will frequently place himself in a conspicuous and exposed situation, will be in the front rank, and will be most in advance to meet the enemy. On the fall of a captain his place will be filled by a subaltern, whose duty it will be to expose himself to a similar and increased risk of death.

The number of officers who die of wounds after the day of action, is generally equal to a little more than one-third part of the deaths occurring on the day of action. Such was nearly the case, at the five battles—Talavera, Salamanca, Vittoria, Orthes, and Waterloo. The deaths on the day of action are generally *four* times as great as the number dying of wounds in the 10 succeeding days. And the deaths during any period of 10 days after action, are generally four times as great as the number of deaths in the period of 10 days next following.

During the last 41 months of the peninsula war, the proportion of captains and subalterns killed was at the rate of 4.9 per cent. per annum. The proportion of privates killed in the same period was at the rate of 3.2 per cent. per annum. By adding one-third part to these numbers for dead of wounds, we shall have the total annual mortality from battle,—6.6 per cent. for officers, and 4.2 per cent. for privates. Since the deaths of captains and subalterns, from all causes, during the same period, was 10.3 per cent. per annum, and since the deaths of privates, from all causes, was at the rate of 16.1 per cent. per annum, it follows that the annual mortality from all causes except battle, was—3.7 per cent. for captains and subalterns, and 11.9 per cent. for private soldiers.

Although it is well ascertained that in the entire peninsula army, the mortality of officers from battle was 50 per cent. greater than that of privates, it is not, however, certain that so great a disproportion exists between the officers and privates who have been actually engaged in the same combats. For there is reason to believe that a greater proportion of privates than of officers is absent when a battle is to be fought. In the first place 22½ per cent. of the private soldiers of the peninsula army, is the proportion generally absent on account of sickness. In the next place a proportion of 8 per cent. is generally detached for various purposes, "on

command" as it is termed. The returns to the Adjutant-General's Office make no mention of the officers absent through sickness, or from being "on command." It is highly probable that the proportion of officers absent from these two causes, did not exceed one-half of the proportion of privates absent from the same causes. The apparent excess in the mortality from battle of officers over that of private soldiers, would then be subject to a considerable reduction, if those who have been actually engaged are alone compared. Such a diminished excess is, however, to be understood as restricted in its application, to battles of an ordinary degree of severity. In the harder fought battles of the Peninsula, as at Waterloo, the mortality of officers was more than 50 per cent. greater than that of privates, regarding only those who were actually engaged.

It cannot fail to excite surprise that the English army of 61,511 men, during a period of three years and five months, should have had 13,815, or $22\frac{1}{2}$ per cent. constantly sick; and yet the French army seems to have been not more fortunate. It is said that in July, 1800 (immediately before the battle of Talavera), the French army in the Peninsula amounted to 275,000 men, of whom 61,000, or $22\frac{1}{4}$ per cent. were sick. What is very remarkable, and ought to have excited attention at the time, is, that the officers of the English army, and the private soldiers of the cavalry and artillery suffered in no extraordinary degree from sickness; there appears therefore to be no sufficient or satisfactory reason for the total private soldiers of the army having suffered such a vast amount of sickness. If due inquiry had been made it would probably have been found that the causes of this sickness were capable of being removed without much difficulty, as the sickness from wounds did not exceed $1\frac{1}{2}$ per cent. (the proportion wounded in a year being 15 per cent., and the average duration of each case of sickness from wounds being assumed to be the tenth part of a year). A very great pecuniary saving to the nation might have been effected by the removal of these causes of sickness; for, by reducing the proportion of sick to 6 per cent., there would have been set free from the hospitals 10,000 men, to be added to the effective force of the army.

The excessive sickness suffered by the peninsula army was accompanied by a proportional excess in the mortality. The general law connecting sickness with mortality is, that there is one death wherever there are two years of sickness. An excess of 10,000 constantly sick would, according to this law, be productive of 5000 deaths in the year. In the present case the proportion of death to sickness being somewhat greater than the usual proportion, indicates the sickness to have been severer than that commonly observed. Instead of two years to each death, the proportion of one year and ten months of sickness to each death, is found to have prevailed in the peninsula army. This proportion has been obtained by diminishing the total deaths by the numbers killed and the numbers of dead of wounds in the 10 days following actions; and comparing the deaths thus reduced with the total amount of sickness observed.

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55. *Statistics of the new Lying-in Hospital. Dublin.*—The *Dublin Journal of Medical Sciences*, for November last, contains an elaborate report on this subject by Dr. Beatty, from which we extract the following interesting particulars.

The total number of women delivered, commencing April, 1834, and terminating August, 1837, was, *one thousand one hundred and eighty-two.*

Presentations.

Head, - -	1,104	
Face, - -	4	or 1 in $295\frac{1}{2}$
Breech, - -	25	or 1 in $47\frac{7}{25}$
Inferior extremity,	15	or 1 in 79
Superior extremity,	5	or 1 in $236\frac{2}{5}$
Placenta, -	4	or 1 in $295\frac{1}{2}$
Funis, - -	6	or 1 in 197
Head and hand,	1	
Twin cases, -	18	or 1 in $65\frac{2}{3}$
Total,	1,182	

Duration of Labour.

Under 6 hours,	- - -	557
Above 6 and under 12	- -	381
12 - - 24	- -	155
24 - - 36	- -	43
36 - - 48	- -	17
48 - - 60	- -	4
60 - - 75	- -	2
75 - - 96	- -	2
96 - - 136	- -	1
Total, -	- -	1,182

Presentation in Twin Cases.

Both, head in, - - -	10
Both, feet, - - -	1
Both, breech, - - -	1
First head, second feet, -	4
First head, second breech, -	2
Total, - - -	18

Fate of Children in Twin Cases.

Both alive in, - - -	13
Both dead, - - -	3
One alive, one dead, - -	2
Total, - - -	18

Total number of children born, 1,200

Males,	614,	of whom alive,	558,	dead,	56
Females,	586,	- -	553,	-	33
Total, - -	1,200	Total,	1,111	Total,	89

Of the 89 children still-born, there were—

Footling cases, - - - - -	10	Forceps cases, - - - - -	3
Breech, - - - - - -	12	Perforator, - - - - -	5
Funis, - - - - - -	4	Premature, - - - - -	12
Twins, - - - - - -	8	Putrid, - - - - - -	8
Arm and turning, - - - -	6	Natural, - - - - - -	19
Ruptured uterus, - - - -	1	Acephalous monster, - - - -	1

Mothers Died.

Of puerperal fever, - - - - - - - -	11
Hemorrhage after delivery, - - - - -	1
Ruptured uterus, - - - - - - -	1
Abscess of the ovarium, - - - - - -	2
Inflammation of the uterus, - - - - -	1
Pneumonia, - - - - - - - - -	1
Total, - - -	17

The following table shows the fate of mothers and children, in the cases where the labour was protracted over 24 hours.

Hours in Labour.	No. of cases.	Child alive in.	Child dead in.
Between 24 and 36	41	33	8
36 and 48	17	13	4
48 and 60	5	3	2
60 and 72	1	0	1
72 and 84	2	1	1
84 and 96	2	0	2
96 and 136	1	0	1
	69	50	19

Of the nineteen children born dead thirteen were males.

Of the eight children born dead under thirty-six hours of labour, one was in a case of convulsions occurring in a first labour, at the end of twenty-five hours, when delivery was effected by the forceps; two were cases of presentation of the breech, attended with much difficulty in passing through the pelvis; one was a case of placenta presentation, one was in a case of ruptured uterus, and three were in cases of difficult labour, in two of which the delivery was assisted by the forceps.

Of the four born dead under forty-eight hours, three were in cases of uncomplicated difficult labour, one was delivered by the forceps.

Of the two born dead under sixty hours, one was a breech case, the other a natural presentation.

The one case born dead under seventy-two hours was a breech presentation.

The one under eighty-four hours was in a case requiring delivery by the perforator.

Of the two born under ninety-six hours, in one case the mother was four days in labour before admission—delivery accomplished by the perforator. In the other the labour, though constant, was not severe.

The one case in which the labour lasted 136 hours was terminated by the perforator.

From this table, faithfully extracted from the hospital book, it appears, that of the sixty-nine women whose labour exceeded twenty-four hours, only one died, and her's was a case of ruptured uterus; that fifty children were born alive, and nineteen dead, thirteen of whom were males; and that of the nineteen children still born, *one* was in a case of convulsions, *one* in a placenta presentation, *one* in a case of ruptured uterus, *four* were breech presentations, *three* were delivered by the perforator, and the remaining *nine* were ordinary head presentations.

MISCELLANEOUS.

56. *Climate of Venice.—Its effects on consumption, &c.* By Dr. Raimana.—According to Ehrmann, in the province of Venice the duration of life amounts, on an average to 31½ years; in the mountainous parts of Austria it varies from 40 to 43 years. Of 100,000 persons born in Venice 16 only lived beyond 100 years; in Stiermark, 138. In the town of Venice neuroses and intermittent fevers especially are epidemic, but by no means so constant as in other marshy grounds. Scurvy is also unfrequent. Scrofula and phthisis tuberculosa, however, occur only sporadically. The air alone seems to be the prophylactic against these mischievous diseases. According to Roubandi, an excellent chemist of Nice, the air of Venice contains a large quantity of muriatic acid. Generally, its climate comprises all that is desirable to a phthisical patient; namely, a mild, humid air, not deficient in oxygen; an equable temperature; little wind; and, what is very important, no dust. The mean temperature of Venice in the 14 years 1811—24, was 57·170; the maximum temperature observed in this long period was 92°, the minimum, 18°. Tuberculous phthisis at Venice has a mild and slow course. This is especially observable in strangers residing there for that complaint. The more inflammatory characters, discharge of blood, cough, intercurrent inflammation of the pleuræ, are relieved most by the climate of the lagunes. Still more salutary is the climate of Venice against the common chronic cough, chronic inflammations of the larynx and trachea, and hoarseness depending upon an inflammatory state of the mucous membrane. This is by no means constantly the case with the southern coasts, the favourable effect of sea air being neutralized by harsh winds, and other pernicious influences. Most physicians agree that the whole of southern France, in pectoral diseases, is an improper residence, with the exception of the Hyeric Islands.—Changes of temperature, cold and biting north winds, favour the developement of such complaints.

The climate of Venice is invaluable in the prophylactic treatment of scrofula, but disadvantageous to patients with hydrothorax chronicus, asthma, or phthisis pituitosa. Chronic hoarseness produced by atony of the ligaments of the glottis, or by spasm rather than by inflammation, will be increased. It is advisable for all such as visit Venice for consumption, to leave the town during summer, i.e.: from June to the end of September. In that season the evaporation of the canals is very disagreeable, the gnats troublesome, and the heat may be disadvantageous and productive of more lassitude and weakness.

It is right to add, that from an official return recently published, the population of the city of Venice in 1830, was 98,740 inhabitants; and that in the same year 4,456 deaths were recorded. The mortality was therefore 4·34 per cent. The

mortality of the province—the country around—was 4·03 per cent. This mortality is much higher than has been observed lately in any English city; but it does not prove that Venice is not, as Dr. Raimann contends, an eligible residence in some stages of consumption.—*Brit. Ann. Med.*, and Dr. Raimann's *Medicinische Jahrbücher des Otrichen Staates*, N. 3, 1837.

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57. *Animal Magnetism.*—It would appear from our Journals that animal magnetism is making decided progress in London, and that some very distinguished men of that capital have become converts to a greater or less extent, to its verity.

It is to be hoped that now so many able men have their attention directed to the subject, that whatever modicum of truth there may be in this supposed power will be established, and that the great amount of fallacy which is mixed with it will be fully and irrefragably exposed.

In the mean time the following extract, from a communication to the Editor of the *Lancet* on the subject, by Dr. Sigmond, will be read with interest.

"I entered the field of inquiry as a sceptic, and as such, after my inquiries, I remain, as to the belief that any individual is in possession of a power, save that which the strong mind exerts over the weak one, by which he can exercise a preternatural effect over the human frame. I totally disbelieve the existence of any fluid which can, at the will of an operator, be made to pass from his body into that of another, and thus, at his command, produce unwonted sensation.

"In the course, however, of my imitations of the operations I have seen performed by others, I have observed certain most singular phenomena to arise, with which I was previously unacquainted, and which, I think, are of some value, and which, by the cautious investigation of the highly intellectual men who are constantly seeking to add to the means of prolonging life, and rendering it happier, may yet be found to lead to some physiological and psychological facts. I merely wish to state what I have observed, and to offer to show that certain consequences result from a peculiar kind of manipulation, which may easily be acquired, and which, if practised with dexterity, in some instances, might be productive of considerable influence in different conditions of the body.

"Some weeks since the Baron Du Potet de Sennevoy, did me the honour to invite me to be present at a trial of his magnetic power at the *University College Hospital.* I there saw him perform a series of actions upon different individuals, and he, in two instances, produced what may be termed artificial sleep upon two females, and this was the full extent of his success; his other attempts were failures. The successful cases, however, arrested my attention; they seemed to be the result of simple means, nor could there, at least I thought, be a doubt that the same power existed in any individual who chose to exert it. This species of magnetism, I must observe, differed very materially from what I had seen practised many years since by a pupil of Dr. Maineduc, at Bath; it had less pretension, and was much more practicable. From the little opportunity I had of judging of the Baron Du Potet, I drew the conclusion in my own mind, that he felt an honest conviction that he was possessed of a peculiar faculty, and most distinctly do I acquit him of any intention of playing upon the credulity of those by whom he was surrounded; but I feel that I have a right, with the same candour, to say, that I do not think that he is aware how he produces the extraordinary effects that followed his manipulations.

"I immediately determined to investigate the subject, and for that purpose tried a great number of experiments; but I was most unwilling, for a great length of time, to make my observations at all public, because I thought that I might be accused of seeking notoriety by investigating a subject which rather belonged to the community than to the profession, and one which seemed to be addressed to the popular feeling so easily excited, rather than to the calm and dispassionate consideration of the followers of science. Finding, however, that two distinguished members of the profession, Dr. Elliotson and Mr. Mayo, thought the subject worthy their attention, I persevered in my observations; and, added to this, I was invited by an illustrious individual, whose regard for the medical profession, and for every thing connected with it, I have, from my official position, had opportunities of witnessing and admiring. Earl Stanhope not only attended the Baron in his visits to the hospital, but devoted the energies of his highly-culti-

vated mind to an examination of the merits of the system, and he did me the honour to express his wish that I should prosecute the labours I had commenced. As a lecturer, too, I thought this a subject intimately connected with therapeutic powers, and as, by the publicity of your Journal, I am standing before the profession, I have felt that I am not intruding myself by giving the result of my experiments. These have been performed, of course, with the full certainty that I possessed no peculiar power which could be productive of any effect that might not attend upon the exertions of any other individual. The extent of my examination has been such as to satisfy me that I can produce a sleep of a very unusual character, by certain manipulations which do not require me to be in actual contact with the person upon whom the operation is intended to be performed; that I have acquired a certain degree of experience, by which I know how to accommodate the manipulations for the purpose required; and that I can communicate to another individual, in a short space of time, all the information necessary for the production of this sleep.

"I commenced my series of experiments by imitating the actions of the Baron Du Potet. My first subjects were of the uneducated class; but I found them so prone to believe in the marvellous—so anxious for extraordinary results, that they deceived both themselves and me. I have since tried the same manipulations upon the higher classes, and though I find them much more sensitive to every impression, and their nervous system more easily acted upon, and although, occasionally, the imagination has led some of them away, yet I have succeeded in giving a very peculiar sleep, amounting almost to stupor, to a vast number of individuals. I have constantly found females much more susceptible of the influence than men; nor does it produce upon them all precisely the same state of sleep. For while in some it is a sort of trance, during which, as often occurs in that unnatural state, pain is scarcely felt, in others it produces hysteria, convulsions, and I have likewise known fainting occur. The most remarkable case that has fallen under my observation, and which, while it excited in me great anxiety, and the deepest interest, has taught me to prosecute my researches with extreme caution, has occurred to me within the last two days. I was enjoying the hospitality of a most amiable family in Fitzroy-square, when animal magnetism became the topic of conversation, and I related the trials I had already made. One of the young ladies proposed to become the subject of experiment, to which I very willingly assented; for, having on former occasions attended her during momentary sickness, I was fully aware of the natural strength of her constitution, and the absence of that nervous temperament which renders this system totally inapplicable. I began what are technically called "the passes." They, as is not unusual, excited laughter and incredulity. I proceeded, for about five minutes, and then stopped and inquired if any sensation was produced, and the answer was, "a slight sleepiness;" and ridicule was again thrown upon the subject. I recommenced the manipulations; I observed the eyelids falling, and at last they closed; but, as the same incredulous smile remained, I persevered for three or four minutes, when I, almost doubting whether any influence had been produced, inquired what the feelings were; to this no answer was returned. I found my young friend was in the most complete trance I had ever yet witnessed as the result of my magnetism. The stupor was most profound; and I then tried the usual means to arouse her, but they were vainly exercised. After a few minutes I found the hands become icy-cold, the face lost its natural hue, and became perfectly pallid; the extremities became quite cold; the respiration was imperceptible; the stimulus of light did not affect the eye; on speaking to her a faint smile was excited, and a quivering of the lower jaw, which seemed to indicate a wish but an incapability of answering; the pulse became gradually feebler, whilst the external appearance altogether bore such a decidedly deathly cast that naturally some apprehension was excited amongst her family, by whom she was surrounded. Of course I could not but feel a certain degree of anxiety and regret that I had produced such a state, and much uneasiness at the thought that I had inflicted a moment's alarm to my kind friends. These feelings were, however, less acute, from the full knowledge I entertained that the family had long reposed the most perfect confidence in me, and that no member of it had that nervous susceptibility, which would have embarrassed me had any untoward accident presented itself.

"I placed the perfectly unconscious subject of this distressing scene in a horizontal position, and directed the application of warmth and of friction to the extremities. Circulation and animal heat were gradually excited, but she presented a most singular appearance of suspended animation. In this condition she remained more than four hours, for I had commenced a little after ten in the evening, and it was about half past two, that, on some slight effort being made to rouse her, she uttered some of the most piercing shrieks I have ever heard; there were convulsive efforts to raise the limbs; the face, too, became convulsed; she opened her eyes and stared wildly around; she was placed in the upright posture, and seemed sensible. Advantage was taken of this circumstance to carry her to her apartment; before, however, she could reach it, she fell into a profound slumber, but its character was more natural. She was placed in her bed, appearing perfectly composed; the countenance had acquired its natural hue; the respiration was perfectly easy, and the pulse natural. In this state she remained during the whole of the day, until 9 o'clock in the evening, once only opening her eyes, and addressing a few words to an anxious and affectionate sister who never left her side. In the evening the young lady joined her family perfectly restored to her wonted cheerfulness. She expressed no complaint whatever. She stated that the feelings that first came over her were those of extreme quiet and repose,—a species of ecstacy,—a gradual languor seemed to steal over her; that she heard something passing around her; felt an inclination, but an utter impossibility, to reply. The first waking up she, however, described as almost terrific. It was as if she was bursting from a narrow and confined space, and as if she arose from interminable darkness. The lesson that I have thus learnt will not be lost upon me.

"It is upon the respiration that my efforts are directed, and the principle is precisely that which is called "stealing the breath away;" besides which, by the undulations of the air caused by the movements of the hands an unusual cold is produced which very much assists the effect. The art seems to me to consist in obliging the individual again to inspire, by the nostril, the carbon he has already expired, whilst the currents of air caused by the extended fingers produce some effect upon the facial nerves, thus inducing the eyelids to fall down. Association of ideas is very strikingly evinced by those who have been once magnetised, for then the slightest quantity of manipulation is necessary; the patient evidently having acquired a habit of inhalation by the nostrils. It is from the centre of the nose downwards that the effect is most speedily induced, and the drawing of the hand downwards from the brow, so as to effect the eyes, I find to be quite unnecessary towards producing the effect. I do not consider the process I have employed by any means perfect; and I have little doubt, when the attention of the profession is drawn to the subject, that considerable improvement may result; at the same time I am persuaded that the manipulations may be the cause of very great alarm. I have now exercised this art upon nearly a hundred persons, and with very general success in the fairer part of creation; I have quieted delirium and given sleep where it has been for many nights vainly solicited. I have magnetised in the presence of many medical men who have been in attendance on the Baron Du Potet's lectures, and they have declared that the sleep appears identical with that he produces, and that it is proved by the fact that animals may be sent to sleep by the same movements. I am very anxious that the members of the profession should try the same process."

AMERICAN INTELLIGENCE.

New Bullet Forceps.—We take great pleasure in making known to our readers a very ingeniously contrived bullet forceps, invented by Dr. Everett of this city, and placed upon our table some months since by Dr. T. D. Mütter.

This instrument has the merit of great simplicity in its construction, and possesses all the advantages of the scoop in its easy introduction into narrow wounds, such as those formed by projectiles; and at the same time being convertible into a forceps after its insertion, it has the greater powers of the latter in the extraction of balls.

The construction of this instrument will be readily understood by a reference to the accompanying figures. *Fig.* 1, represents the moveable blade. This is formed like the common scoop, except that at the lower end it terminates in a collar which has a groove in it and an oval ring handle attached to it. The permanent blade passes through this collar and revolves in it. *Fig.* 2, represents the permanent blade with both handles. This blade and its handle form a single piece. The handle of the moveable blade has a slit in its upper end, which receives the other handle, and the two are fastened together with a pivot. This pivot is represented by the lower circle in *Fig.* 2. *Fig.* 3, is a screw which passes through the groove in the collar of the moveable blade, and screws into the handle; it prevents the moveable blade from slipping off. *Fig.* 4, shows the instrument with the two blades together, and exhibiting the form of a scoop. In this manner it is introduced into wounds until the scoop end passes the ball; the handles being then held firmly with one hand, the moveable blade is made to revolve with the other hand, half a circle, when the instrument becomes a forceps, as seen in *fig.* 5, and is employed as such, the blades closing on being pressed together.

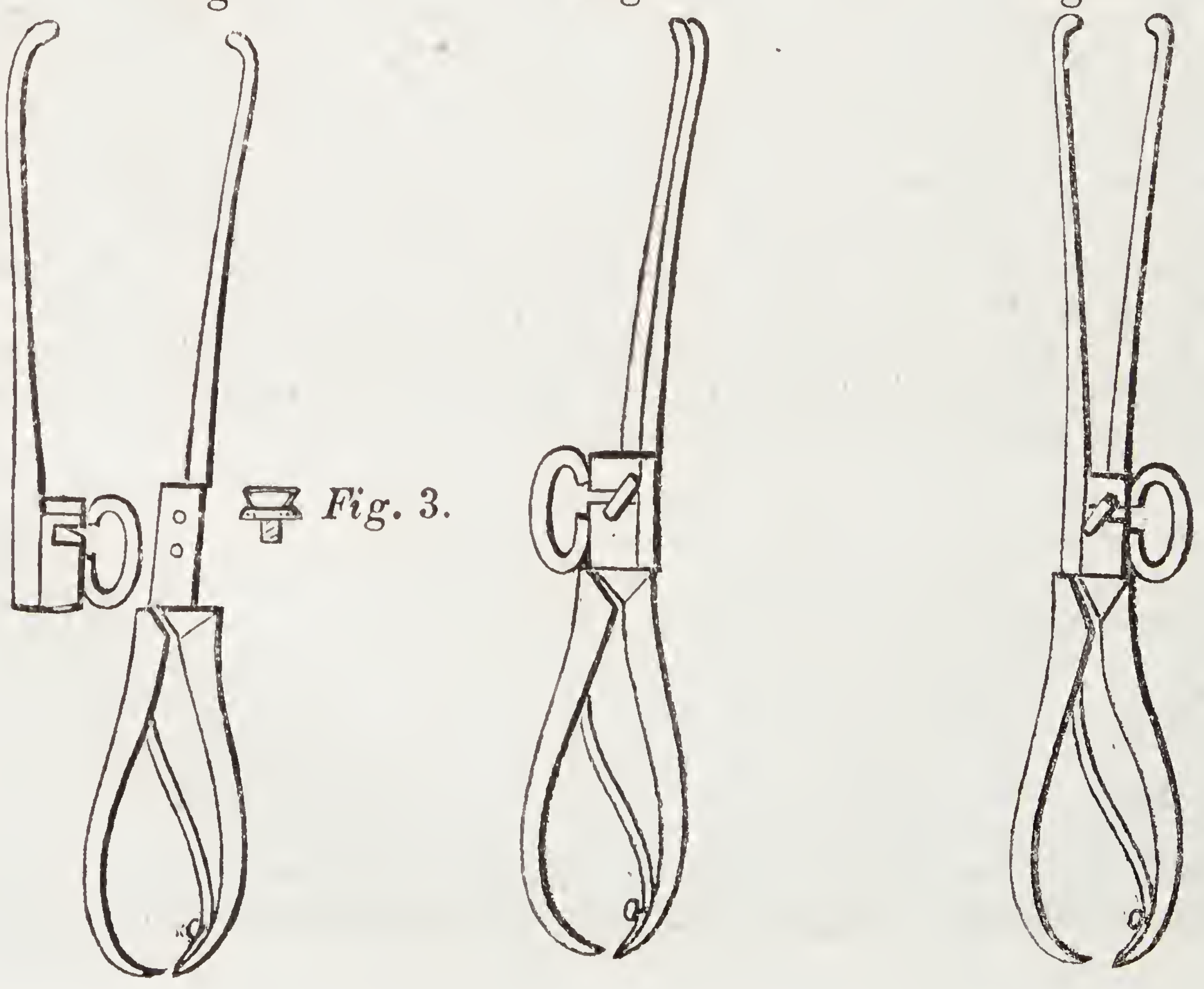

Fig. 1. *Fig.* 2. *Fig.* 3. *Fig.* 4. *Fig.* 5.

Case of deep-seated abscess pressing on the Larynx and Trachea, not detected until after death. By J. Byrne, M. D., Demonstrator in Anatomy in the Regent's Medical Faculty, Baltimore.

So unexpected and obscure are the forms which disease sometimes assumes, that the physician in forming his diagnosis is occasionally, if I may use the expression, taken completely "off his guard." To point out the by-ways of disease, therefore, has ever been among the chief objects of the attentive observer and faithful recorder of facts. Viewed in this light, the following case is one of interest; a relation of it, I trust, will not be altogether unworthy of a place in your useful journal.

The subject of it, a healthy child æt. 12 months, of a rather full habit, was seized with convulsions on the evening of the 12th of March. The aid of my friend Dr. M. was immediately requested. The child was found, as already stated, labouring under a form of convulsions depending on embarrassed breathing. The difficulty of respiration was extreme, the face swollen and livid, the jugular veins full and prominent. The pulse was small, rapid and labouring, presenting indeed the characters of exhaustion rather than those of irritation; the skin was but little heated and somewhat moist. From the account of the parents it appeared that the child, since the Thursday previous, had been labouring under a fever with a difficulty in deglutition and respiration. The breathing too, I should observe, was occasionally attended with that peculiar ringing and sonorous sound heard in croup. The phenomena were pretty accurately those of tonsilitis threatening suffocation. The prominent feature in the case, however, was the removal of blood in the brain, arising from the failure of the lungs in the performance of their accustomed office. The jugular vein was consequently opened and a moderate quantity of blood abstracted with considerable relief to the patient. The blood presented none of the traits characterizing the existence of inflammatory action—it was thin and serous, and did not assume either the buffy or cupped appearance. The throat was then carefully examined, but no aberration whatever from the healthy state was discoverable in the tonsils, velum, or pharynx. The epiglottis was distinctly seen elevated, carried forward and appeared œdematous. The throat was filled with a glutinous secretion, which obscured in a great degree the view of the parts. Here then was a case to all appearance of angina œdematosa. True there was, in a degree, in the present state of the patient, an absence of the usual symptoms of active inflammation developed in a young, healthy, and rather plethoric subject, as evidenced by the blood, the character of the pulse, and the state of the skin. These facts did not escape observation; but yet they might be all owing to the asphyxiated and exhausted condition of the patient—besides, there was no other probable hypothesis, by which the phenomena presented in the case could be accounted for: the state of the tonsils, velum or pharynx, failed to afford the desired explanation; nor did a careful examination of the neck discover any tumour to whose agency all the turmoil could be referred. Although, therefore, there was a degree of uncertainty as regards the exact condition of things, in the mind of the medical attendant, yet he leaned to the belief that it was an affair of the larynx, of the kind already described. In this supposition the indications were obvious. The excessive secretion in the fauces was to be dislodged, and the assumed affection of the larynx to be overcome by antiphlogistics and revulsives. An emetic was accordingly administered, and certain local applications to the throat directed. Should this treatment fail to afford prompt relief, bronchotomy was obviously the only resource, which held out any prospect of relief. A few hours after, Dr. M. requested me to visit the case with him, for the purpose of assisting in the performance of bronchotomy, should that operation be deemed expedient. We learnt on our arrival that the emetic had produced its effect, and that the other directions had been complied with. But little change, however, was wrought in the case. The little suf-

ferer was every moment threatened with asphyxia. The throat was again examined, but the excessive frothy secretion totally precluded a view of the parts. Having satisfied ourselves by means of the stethescope that the lungs and trachea were in a healthy state, we immediately urged the necessity of opening the trachea. The parents, however, strenuously withstood our entreaties; and we were doomed to stand by almost quietly and witness the death of a fellow being, the result of ignorance and prejudice. The child died on the following morning at 9 o'clock.

Three hours after death, we proceeded to make a post-mortem examination. On exposing the neck and thorax, nothing of moment was observed, although we traced out particularly the relation of parts about the neck preparatory to the performance of bronchotomy, which was done as a matter of practice. On raising the integuments and throwing back the sterno-mastoid &c. muscles, and of course cutting through one of the largest of the deep facia of the neck, an elongated tumour was observed protruding to the left side, and occupying a situation below and between the larynx, trachea and the great vessels of the neck. On laying open this abscess, (for such it proved to be,) a very large quantity of perfectly healthy pus escaped. It was then found that it had originated in the cellular tissue posterior to the pharynx, and extended from the basilar process of the occipital bone to near the sternum. The spine and adjacent muscles coated with coagulable lymph, formed its posterior walls; the upper and anterior consisted of the posterior wall of the pharynx, which was pushed forward by the purulent collection against the epiglottis. This latter organ was urged forward on the tongue, and the opening of the glottis overhung and closed by the anterior walls of the abscess. The lungs were healthy, the epiglottis was slightly inflamed and œdematous; serous effusions had taken place in the great cavities, owing, of course, to the obstruction in the venous circulation. The sides of the orifice in the jugular vein were patulous, and no effort had been made by nature to restore the solution of continuity. This interesting display of facts at once afforded an explanation of all the difficulty, and still more strongly excited our regret, that a resort to the operation of bronchotomy had been prevented; for although an indirect remedy, and one too the application of which would have been unnecessary, had the true cause of all the mischief been recognised; still it would not on that account have been less efficacious in warding off immediate danger, and in affording nature the time necessary for instituting those processes by which we would have been apprised of the exact condition of things, to which a prompt and effectual remedy would then have been applied.

Baltimore, May, 1838.

[Deep-seated abscesses pressing on the larynx and trachea, are of not extremely infrequent occurrence, and often prove fatal from the disease not being recognised. Under this conviction, we several years ago (see Philadelphia Journal of the Med. and Phys. Sciences for August, 1827, p. 271,) called the attention of the profession to the subject, and alluded to two cases which had occurred in this city, in neither of which was the disease suspected until developed after death by dissection. The case communicated by our correspondent will, we trust, render practitioners more heedful of this disease, which can be readily conducted to a favourable termination when its existence is detected. It is almost unnecesary to add that the abscess should be opened; but sometimes it will be sufficient to make a deep incision, and the matter will in a few hours find a vent into the wound. Ed.]

Division of the Tendo Achillis for the cure of Club Foot.—We have been favoured by Dr. James H. Dickson, of New York, with a communication from which the following is an extract.

"As the very simple yet beautiful operation of Stromeyer for the rectification of deformities of the feet, seems to be rather slow in acquiring the confidence of American surgeons, I have concluded with a view of contributing to the more general adoption of a remedial measure so easy of performance, while it is so successful in practice, to furnish a sketch of a case* in which I adopted it, soon after the republication in your number for Nov. 1834, of Stromeyer's cases and mode of proceeding. The operation was performed while I resided in Fayetteville, N. C., January, 1835."

It will be seen from this statement, that Dr. Dickson has priority over Dr. Detmold in the performance of this operation, and indeed, so far as we at present know, he was the first to perform it in this country.

Prof. N. R. Smith, of Baltimore, writes to us that he performed this operation two years since with complete success, and within the past year has done it a second time with a like result.

Since the publication of our last number, the operation has been twice performed in this city, once by Dr. G. W. Norris and once by Dr. T. D. Mütter. Both cases, we learn, are doing extremely well.

Urinary Calculi discharged by an Abscess in Perinæo. By Samuel Jackson, M. D., late of Northumberland.

In February, 1819, I visited Henry Romberger near Gratz Town, Licken's Valley, thirty-two miles below Northumberland. He laboured under a most distressing dysuria, attended by a very frequent desire to pass water, but, in reality, a sabulous mucus, which came away with great pain and difficulty. Of this he passed great and surprising quantities, but there were no small calculi, nor could I detect any thing like calculus by sounding. The patient was about 65 years old, and was greatly broken down by this unremitting distress.

I gave him a variety of medicines for some time without any relief, unless so far as laudanum procured him better nights. At last we prescribed lime water and castile soap, as used by Dr. Whytt, when, to our very great comfort, as well as his own, he soon began to amend, and ere long he appeared to be perfectly cured.

After some months he sent for me again, when I found him suffering under his old complaint, with the addition of a large suppurating tumour in the perineum. He told me that immediately after my last visit, he had been persuaded by some of his neighbours, that the medicines I had given him were not in reality curing him, but merely shutting up in his bladder the mischievous matters which had previously come away, in so salutary though painful a manner, and that he ought to take a certain weed in order to discharge them; that having taken the said weed for some time, as advised, his complaint returned, as had been intended, when at last he came to his senses, and perceived the mischief he had done; that a second use of the soap and lime water had entirely failed; that he had been suffering most severely, for several days, with the perineal tumour. I recommended him to go on with Whytt's remedies, and to apply a poultice to the perineum.

In a few days his son came to me in Northumberland, with information that the tumour had discharged a large quantity of pus mixed with calculi, one of which, as large as a robin's egg, he held in his hand.

I gave him directions about his father's diet; desired him to return to me, *pro re nata*, and that meanwhile he should use the lime water and soap.

After some weeks they sent for me to visit the old man once more, when I found him moving about the house clothed in his wife's petticoat, the water coming by drops perfectly clear and natural. He was free from pain, and was fast recovering his former health. The fistula in the perineum had entirely healed, and the water was coming by the urethra.

* This case shall appear in our next number. Ed.

A cure for this incontinence I considered hopeless, and after promising him some convenience for the reception of his urine, I left him for the last time. He died in a year or two after this period, but I believe his old complaint did not return. There was at least a half pint of calculi, of various sizes, from that of a robin's egg to that of a pea.

Whether this case of a natural cure of lithiasis be a solitary one in the records of medicine, we are not informed.

Chilblains cured by Balsam of Copaiba.—Dr. W. S. W. Ruschenberger, of the U. S. Navy, states, in a communication in the Medical Examiner, (No. 5,) that he treated a number of cases of chilblain occurring among the crews of the U. S. ships Falmouth and Peacock, in the years 1833 and 1837, by smearing the parts affected with balsam of copaiba. All the cases, he says, where ulceration had not taken place, were entirely relieved by one or two applications, and very few required more than a third application of the remedy.

When this communication appeared the Editor of this Journal was performing his tour of duty at the Philadelphia Orphan Asylum, where there were thirty-two children affected with chilblains. He was induced by the representation of Dr. R. to try the balsam of copaiba in a few cases, and the result was so satisfactory that he had the application made to all of them. In every one the relief was most prompt, and in two or three weeks the whole were cured.

Bite of a Spider, succeeded by alarming symptoms. By Daniel Stahl, M. D., of Vincennes, Indiana.]

Eli Hoops, of York county, Pennsylvania, aged 27, a robust farmer, was stung, by a *black spider*, near the external condyle of the right arm, at half past 5 o'clock in the morning of the 16th of August, 1833, while lying awake in bed. He soon got up, and not minding this apparently trifling accident, went into the stable to feed his horses. While there he felt some smarting in the bitten part, which increased rapidly to a severe pain, extending to the shoulder and chest. He now became alarmed, left home for the purpose of walking to my office, (half a mile from his house,) but was, after proceeding about one hundred yards, obliged, by the violence of the pain, to return home and go to bed. At half past 7 o'clock, A. M., I saw the patient, and found him in the following condition: His face was collapsed, features expressive of great pain and anxiety; skin cool and pale; cool, clammy perspiration on the forehead; the extremities at times icy-cold; pulse small and tense, but not abnormally frequent; tongue whitish; constipation of the bowels; complains incessantly of a violent pain in the back and hips, extending at times to the thighs. His sufferings were so intense, his complaints so heart-rending, that his relatives and friends became alarmed for his life, and, overpowered by grief, they could not conceal their uneasiness, which operated injuriously upon his mind. On the *external* condyle of the right arm there was a red spot of the size of a half dollar, in the centre of which was the sting. No swelling. The respiration was not affected.

Before I give an account (and a candid one it shall be,) of my treatment, I beg the reader to take into consideration, that at the time when I was called to attend this case, I had but recently quitted a hospital where I was under the wise guidance of experienced men, and had just commenced practice on my own responsibility; that this case was so novel to me, that the very idea of its occurrence had never entered my mind; that I had, therefore, especially as I could not leave the patient for the purpose of consulting my books, to depend altogether on my own ingenuity; and that lastly, my almost entire ignorance

of the English language deprived me of the counsel of the neighbouring physicians, which, moreover, the patient refused.

I commenced the treatment with an emetic of tartar emetic, and as this had no effect, I repeated the dose combined with ipecacuanha, after which vomiting took place. At the same time I bled the patient on both arms, and abstracted about thirty ounces of blood, after which I scarified the wound made by the spider, and put a cantharides plaster to it. The pain, however, was still increasing, and I applied successively some eight or ten mustard and Spanish fly plasters and warm pediluvia.

Internally, I gave Dover's powders; sphinctus minderrei, with camphor, very large doses in warm tea; also calomel and antimonial wine.

At 2 o'clock, P. M., neither perspiration nor discharge from the bowels had taken place, nor had any of the rubefacients had any effect. By 5 o'clock, P. M., however, the plasters began to draw, the pain to ameliorate, a scanty but warm perspiration ensued, and also a profuse discharge of urine. A strong senna infusion now effected a copious discharge from the rectum, patient felt better, and soon got comparatively well, remaining weak, however, for a long time.

Cases of Anomalous Diseases. By J. N. Powell, M. D., of Westmoreland county, Virginia. [Communicated through Professor J. R. W. Dunbar, M. D., of Baltimore.]

Case I. Some time in September, 1836, I was called to see Mrs. Jinkins, and on examination ascertained that about three weeks previously she had been attacked with pain in the vicinity of the left kidney and spleen. As the pain continued for several days, with little or no abatement, her husband became solicitous of medical aid, and the family physician (Dr. C.) was called in, who bled and cupped the patient, and directed a cathartic of sulph. magnesia every other morning. On two subsequent visits the bleeding and cupping were repeated, which, with fomentations to the affected side, and a solution of sulph. of morphine to alleviate pain and procure sleep, constituted the principal features of the treatment. Circumstances made it necessary for the attending physician to leave the neighbourhood; and, in a day or two, I was called in. I found her labouring under great prostration, excruciating pain, and, to all appearance, hectic fever. The course of depletion had been pushed to a point beyond which it could not with safety be carried, and every means had as yet proved ineffectual. I advised the application of a blister, and a continuance of the sulph. of morphine, and some gentle cathartic, when the condition of the bowels required it. On my next visit, (three days after,) I understood the blister had given some relief; but from a recurrence of the pain, I was induced to think the apparent improvement was not likely to be permanent. A *tumour* had made its appearance in the side, pressure upon which gave pain, and led to the suspicion that an abscess was about to be formed. Fully impressed with this belief, and that when formed, it would point and break externally, I directed a poultice of chamomile, and in other respects the same treatment to be continued. Two days subsequently to this visit, I was called in haste, and was informed that the "tumour had burst," and Mrs. J. was discharging immense quantities of pus by the mouth, which almost produced suffocation. When I arrived the tumour had not entirely subsided, but was so reduced in size as to be scarcely perceptible. The patient laboured under incessant coughing, and large quantities of pus continued to be expectorated. In a few days the cough ceased, pain departed, and every unfavourable symptom disappeared. Mrs. J. is now well, having neither pulmonary nor other disease of the chest. It may not be amiss to state that on my second visit, when I first discovered an enlargement of the side, Mrs. J. had a slight cough, which she attributed to a cold contracted a day or two before, whilst

lying under a window, exposed to a draught of air, but which she did not consider worthy of attention. But up to this period, there was neither pain, cough, nor any other symptom that would warrant a belief in the existence of disease of the chest.

This case, to the practitioner of medicine, is deemed to be interesting in several points of view. In the first instance, it was difficult, if not impossible, to arrive at a correct conclusion as to the *diagnosis* of the disease. The seat of pain was between the spleen and kidney of the left side, which must of necessity have involved doubt as to its *locality;* and the healthy performance of the abdominal functions seemed to embarrass the physician still more, and prevent a decision upon the true character of the disease. It has been suggested that the *abscess was formed in the lungs,* and the tumour created mainly by the pressure of the abscess downward.* Let it be as it may, we have felt anxious to call the attention of the faculty to the case, and have ventured to pronounce it an *anomalous* one.

[We would refer to the case of abscesses of the liver bursting spontaneously into the thorax and colon, related in our preceding number, (see p. 176,) as throwing, perhaps, some light upon the diagnosis of the preceding case. Ed.]

Case II. Late in December, 1837, I was sent for to see Mrs. Caustin of Westmoreland county, Virginia, who a week, or ten days previously, had given birth to a child. Mrs. C. was the mother of several children, and had always enjoyed a good share of health. I found her, as I believed, by no means seriously indisposed; a slight fever, some thirst, and a want of sufficient action of the bowels, were the prominent symptoms. Her milk had begun to flow, and the child had been put to the breast. I directed 7 grs. sub. mur. of merc. and 5 grs. nitrous powder to be given at bed-time, to be followed next morning by a dose of castor oil, and a blister to the back of the neck, provided the pain continued after the operation of the medicine. So little danger did I apprehend, and so confident was I that under this treatment she would get well without further medical aid, that I told her anxious husband I did not think it necessary to repeat my visit, but requested that if, in the mean time, any untoward symptoms should arise, he would then let me know, and I would visit her again.

Nothing further did I hear for four or five days, when her husband sent me word she had been considerably better, and able to walk about the room, but had been taken worse, and he would be glad if I would come and see her. I did so, and discovered, with the exception of the pain of the head, of which she had been entirely relieved, that the symptoms were, in other respects, identically the same. I repeated the calomel and nitrous powder, directing it to be followed, as before, by a cathartic. Two days afterwards I called again, and to my great satisfaction found an improvement, *as I supposed*, in all the symptoms. Fever had subsided, pain in the head relieved, constipation overcome, and the patient, to all appearance, rid of suffering and anxiety, and out of danger. On entering the room, she raised herself from bed, extended her hand, with a countenance expressive of ease and cheerfulness, and told me she was then nearly or entirely well; and but for a pain in the calf of the leg, which she could scarcely feel except on pressure, *she should be well.* I proposed an examination, to which she objected, assigning as a reason, that it was not of sufficient consequence; but on my urging it, she consented. I could perceive no swelling, or redness. There was only *pain on pressure;* which appeared to be muscular. I advised the application of warm vinegar by means of brown paper, and also opodeldoc or camphorated spirit, and, on leaving her, directed that should

* Since writing the above, I have understood from Mrs. J. that for two or three weeks after the rupture of the abscess, she discharged pus by the bowels, which so long as it continued to pass, kept up a constant diarrhœa. This fact goes to show that the tumour was *abdominal,* and was not, as conjectured, seated in the *lungs.*

the pain appear to ascend, and the limb become inflamed and tumefied, (an occurrence I did not anticipate,) to send and let me know. I never left a patient with less expectation, (though I gave such injunctions,) that my professional services would be again required. The next morning a messenger was sent in pursuit of me, who informed me that his mistress was considerably worse, with a request that I would visit her immediately. I did so, and found that though she was perfectly collected, and her countenance natural, respiration was hurried and diaphragmatic, and pulsation in the radial artery had ceased. I at once expressed my apprehensions to her husband, and desired him to send, without delay, for Dr. Murphy, one of our most eminent and scientific physicians. On prosecuting the examination further before Dr. M. arrived, I learnt that the night before, and in about two hours after I had left her, she was seized with the most excruciating pain in the leg, which immediately began to swell, and turned perfectly black. The facts were but a lamentable confirmation of the statement given me, and fulfilment of my apprehensions. I found the leg had increased to double its natural size, was then discharging, and had already discharged from a half to one gallon of blood, and that *through blisters upon the surface;* and strongly threatened, if it had not already reached its incipiency, a termination in *gangrene.* Dr. M. arrived. To him, as to myself, the case was new and *anomalous.* At first we conjectured it might be the rupture of an aneurism. But not being able to discover any orifice through which the blood could issue, this conjecture was relinquished, and we were left in the dark as to the origin of the hemorrhage, and the rapid and unexpected termination of the disease. We had the limb enveloped in a poultice of charcoal, carrot, and red-oak bark; applied a blister above the mortified part; gave wine and quinine and the mineral acids; but all to no purpose. We met at ten in the morning, and she died at eleven o'clock at night.

[The preceding cases though deficient in details essential to a precise diagnosis, have points of sufficient interest, we have thought, to justify their publication.—Ed.]

Case of Epilepsy successfully treated by Trephining. By George Hayward, M. D. March 17th, 1838. Rev. E. Q. S., æt. 41. Married; clergyman, Scituate. Thirteen years ago had a scrofulous abscess below the left angle of the jaw, which healed in seven or eight months, and was followed by a small one in angle between left temple and forehead, which also closed. Soon after, an abscess formed about two inches to the left of the sagittal suture, and just behind the coronal suture; very painful during its formation, which was rather slow; this received no treatment; finally burst, and after remaining open for some time without any tendency to heal, was probed, and the bone found to be carious; after a while a piece of bone came away, of the size of the top of a common thimble, and perforated with small holes, and in about a year from its commencement the ulcer healed. The caries, as far as the patient recollects the statement of his physician, involved both tables of the bone. This abscess was accompanied by several indolent swellings in the neighbourhood, and a swelling upon the sternum, and swelling and great pain in the right arm, with slight redness and much tenderness—these going off under the use of blisters, leeches, &c. At the same time also had "neuralgia" of the left side of the face, with much pain in the left eye and some loss of vision, and luminous flashes and spectra occasionally. These complaints were accompanied by general failure of health, diarrhœa, night-sweats, watchfulness at night, loss of appetite, and great prostration; so that at the cicatrization of the ulcer, he was left in a very feeble condition. Immediately after, fits of an epileptic character occurred every night, or every second night, head being usually drawn back and tossed from side to side; violent spasms of all the limbs and of the lower jaw; loss of consciousness for a few minutes at the commencement of the fit; frequent frothing at the mouth; gritting of the teeth, lividity of countenance, and vocal noise. Spasms continuing at intervals for one or two hours, leaving patient with violent

pain in the head, especially about the cicatrix. Since commencement of disease of the head, has never been free from a dull, heavy, distressing feeling in head, as if from pressure of a "leaden cap," and this always referred to the cicatrix as its centre. Besides the complete fits, has very often had partial fits, in which there were universal spasms, with a confused, bewildered feeling, without loss of consciousness. These fits and spasms have been frequently induced by mental excitement, sudden jars, and unexpected and loud sound; and much mental exertion at any time would bring on severe pain and distress about cicatrix. During whole time has frequently been much annoyed by an excessive secretion of very pale urine, sometimes to the amount of two or three quarts in twenty-four hours, requiring him to pass it very frequently; and this has occurred both immediately after a fit and during the interval. Patient gave up his mental pursuits for two years after healing of ulcer on head; his fits growing less frequent as his health improved, till they occurred only once in four months; till the last year, when their frequency has increased, the last two intervals having been only two months each. Last fit occurred March 4th.

For the last ten years, health has been quite good, excepting after fits, from which he recovered but slowly, and excepting also the constant sense of pressure in the head. When trouble in head has been most severe, has often had nausea. For a year previous to abscesses, had devoted himself very assiduously to study and writing, especially in the preceding summer, which was excessively hot, and during which he was often exposed to great heat and fatigue in the discharge of his duties. Fits apparently not excited by bodily exercise, of which he has used much for several years past.

18th. Pulse 72, regular; appetite pretty good; bowels regular; sleep disturbed and broken. Complains of much pain and distressed, heavy feeling in head, principally about cicatrix. On examination, two inches to the left of the sagittal suture, and just behind the coronal, there was found a pit, barely admitting the end of the little finger, the integuments being drawn in and adhering to the bottom, which being probed feels firm and resisting. Some depressions felt in bone, round edges of the pit, probably from exfoliation of the outer table. Some tenderness about pit on pressure. Very slight pulsation thought to be observed in it at times, but this not satisfactorily determined. Diet—milk and vegetable food. ℥iv. of blood to be taken by cupping near pit.

19th. About ℥iss. of blood only was obtained. Returned from church yesterday with violent pain in the head and nausea; laid down and slept with relief—sleep broken as usual. Now pulse 66; appetite good; bowels open. Complains of much pain in the head, and throbbing in cicatrix. ℥vi. blood to be taken by cupping near cicatrix.

20th. ℥vi. of blood were taken with instantaneous relief of pain and heaviness, head feeling much lighter than it had at any time during last 13 years. Sense of heaviness, however, returned soon, though in a less degree than before cupping. Slept quite soundly through the night. Sense of heaviness less now than usual. Otherwise the same.

21st. Slept better than usual, but awoke about 4 A. M., with general spasmodic action of limbs, head, &c.

23d. Last night awoke, about midnight, from sound sleep, by general and violent convulsions, with some confusion of mind, but not actual loss of consciousness. Pain in head increased; otherwise the same. Strength good. A consultation was held this day, and it was unanimously agreed to recommend an operation; but to state at the same time to the patient the uncertainty and danger. ℥ij. of the solution of salts were directed to be taken early in the morning.

24th. Constant pressure and heaviness in head as usual. Awoke frequently in the night with indescribable distressed feelings in legs, which he has been subject to—but had no spasms. Now complains of much pain about cicatrix, with throbbing, more than usual. Mouth and throat dry and parched. Pulse 108. Appetite small. Mind calm and composed. Two dejections.

Operation by Dr. Hayward, at 12, M.—Patient being laid upon the table, scalp having previously been shaved, three straight incisions were made, behind, before, and inside of cicatrix, thus forming three sides of a square, and the flap dissected up and turned back; in doing which the adhesion of the scalp to the bottom of the pit was cut through, and the flap perforated. The periosteum having

been removed, a large trephine was then applied so as to include the pit in the bone, and the bone slowly and carefully sawed through. The piece of bone was easily detached from the dura mater, except at about its centre, where there was an adhesion of the membrane to a short, delicate, bony projection, which was broken off in the examination after the bone was removed. This adhesion was separated, without much difficulty, with the end of a probe, and the bone removed with instantaneous and complete relief of the sense of pressure, the patient declaring, while on the table, that he had not felt so well for thirteen years. Dura mater appeared perfectly healthy.

Wound having been cleared of coagula, &c., the flap was brought over and secured by adhesive straps, simple pledget over this, and a loose bandage. The patient was then conveyed to bed, having borne the operation with the utmost calmness and fortitude. Bone removed, one inch in diameter, and of very irregular thickness.

Patient to be kept perfectly quiet. Head to be kept raised. Room to be darkened. To take for nourishment, gruel and arrow-root; and for drink, lemonade, barley water, &c.

It is, perhaps, unnecessary to give any more of the hospital record; it may, however, be proper to observe that he continued comfortable till the afternoon of the day after the operation. He then became restless, with universal distress, heaviness and diarrhœa, and on the evening of the following day, erysipelatous inflammation showed itself in the forehead. This gradually extended over the face, and down the neck, but did not attack the wound, which went on well and healed kindly.

Notwithstanding the erysipelas, the convalescence was rapid, and during it there was not a return of one of the symptoms, for the relief of which the patient submitted to the operation. As I before observed, he walked out in twelve days after it, and on the 9th of April he was discharged from the hospital, well.

P. S. Since the foregoing was written, I have received a letter from the gentleman who was the subject of this operation, dated June 12th. In this he says, "In regard to my present health, it gives me great satisfaction to be able to state, generally, that I am, with a slight exception, very well. The peculiar sense of relief which I expressed in the moment when the operation was over, has become a part of my common consciousness. I am aware of nothing which affords reason for doubting the ultimate entire success of your efforts for my restoration to sound health."

The slight exception to which he refers, is the occasional occurrence of pains in the head, which he says are "dull and heavy, rather than acute, and never of long continuance, occurring upon any protracted effort of attention, as in listening to conversation or a discourse. I have the same with more severity upon any attempt at study. These pains are in the anterior part of the head, in the region of the old difficulty. They are distinguishable by myself from the peculiar leaden pressure which that difficulty made a uniform habit, and do not come so frequently or stay so long as to impair the sense of relief in that quarter, to which I alluded in the opening of this letter. Nothing like spasms, nothing approaching to them, has ever returned upon me. I have preached four entire Sundays, with great comfort, and no one symptom of evil consequence. It has happened that my rest afterwards has been more tranquil than on some other nights."—*Boston Medical and Surgical Journal*, *June* 27, 1838.

Delirium Tremens.—Dr. John Ware, of Boston, one of our soundest and most judicious practitioners, in a memoir on Delirium Tremens, published some years since, and which we had the pleasure at the time of commending to the favourable notice of our readers, (see our No. for November, 1831, p. 166,) expressed the opinion that the disease just named was not capable of being arrested in its course by treatment,—that the paroxysm of watchfulness and delirium was not shortened by remedies, but would continue for a certain time, and then arrive at a spontaneous termination either in death or recovery—and that opium so far from exercising, as may have been supposed, a

favourable influence on the event, served rather to increase than diminish the mortality.

The opinions thus expressed were not founded upon any strict or analytical examination of the cases referred to, but were simply the result of the general impressions which are left upon the mind of the practitioner, by the observation of disease, as it presents itself in the routine of ordinary practice. The author was fully sensible of the cautious reliance which should be placed on results which have been thus obtained, and it seemed, therefore, desirable to inquire how far these opinions would be confirmed by a more strict examination of the cases on which they were founded.

Such an inquiry has accordingly been made, and the results are as follows. They were communicated to the Boston Society for Medical Improvement, and have been published in a recent No. of the *Boston Med. and Surg. Journal.*

"Since the publication of the paper alluded to, a few cases of delirium tremens have fallen under my care, and these have been included in the examination. Other cases, on the contrary, which were then referred to, have been now rejected. The objects of that paper embraced a general history of this peculiar delirium, whether occurring in a distinct paroxysm or only as a transient symptom in the course of other diseases. I have now only included those cases in which the delirium presented itself in the form of a regular paroxysm. I have also excluded thirty-one cases which occurred under my care at the Boston Almshouse, as I have no notes of their history or treatment, but merely of the event of each case.

"The number of cases in private practice was 69, occurring during a period of about twenty years. Of these cases 63 occurred among males, and 6 among females. The whole number of deaths was 11—all the fatal cases were of males. Of 31 cases at the Almshouse, 5 were fatal. The ratio of mortality in all the cases was thus very nearly the same.

"1. Eight cases were treated by *large doses* of opium, given with the intention of bringing about a termination of the paroxysm by sleep. The quantity administered varied, in different cases, from 24 to 72 grains, and it was usually given in the course of 48 hours. Four of these cases proved fatal. One died after sleep had been procured, the patient never awaking after the full effect of the remedy had been produced, but expiring in a state of coma. The remaining three died without having slept. Neither of these eight patients was bled. One of them was the subject of a severe acute disease, dysentery, in the course of which delirium tremens supervened; this was a fatal case. The others, so far as could be ascertained, laboured only under such general symptoms of disorder as are common to those made sick by intemperance, or some such chronic ailment as is frequent among persons of those habits, and could not be supposed to influence the course or event of the delirium. In the cases which recovered, restoration to health took place speedily and completely after sleep had taken place.

"2. Seven cases were treated by *small doses* of opium, or opium given in such manner and quantity as not to have a distinct and powerful influence in the procuring of sleep, the quantity not exceeding two or three grains in twenty-four hours. Two of these patients died, both without having slept. One was labouring under severe peripneumony when attacked by delirium tremens—this case was fatal. One patient was bled, and this was one of the favourable ones.

"3. Twelve cases were treated principally by repeated and continued vomiting, according to the mode of practice recommended by Dr. Klapp, of Philadelphia. Tartarized antimony was chiefly relied on for this purpose, but in a few cases the sulphate of copper and ipecacuanha were substituted, with no apparent difference in the effects of the treatment. Two of these patients laboured under severe disease, one of the brain, and one of the cellular membrane around the knee-joint. The former died, the latter recovered. One patient was bled, and this recovered. Of the whole number, one died.

"4. In two patients a single copious bleeding from the arm was the only remedy employed, and in both the disease speedily gave way.

"5. In nine cases the mode of practice was what may be termed, for convenience of distinction, Eclectic. The treatment was adapted to the prominent

symptoms in each patient, having regard, in its application, rather to the general character of the case and the indications of derangement in particular organs, than to the presence of the peculiar affection of the brain which constitutes delirium tremens. Of course, a large proportion (seven) of these cases, were decided cases of acute local disease, and were treated by the usual remedies. Five of the nine were bled; and of these, two died. Of the whole nine, three died, all of them being cases of peripneumony.

"6. One case, in which the delirium accompanied erysipelas of the face and head, was treated by large doses of the sulphate of quinine. This recovered.

"7. One case was treated by mercurials—salivation occurred, and the patient recovered.

"8. In 29 cases the mode of treatment was what may be properly denominated Expectant. It is not intended to imply, however, that no remedies were administered. At the commencement of many of them active measures were employed for a short period. Thus some were bled, some leeched, to some an emetic was given, several were blistered upon the neck, and all were more or less subjected to the operation of cathartics. Besides these remedies at the outset, various articles were administered in the course of the several cases, but usually of an inefficacious character, or in such doses as probably to have had no influence on the course of the disease. For example, small doses of sp. ether nit., liq. ammon. acet., tinct. hyoscyam., ext. conii., tinct. humuli, tinct. valerian, tinct. assafœtid., and various other medicines, were administered, but from the amount and efficacy of the substances thus taken, no physician, acquainted with their power, would for a moment suppose them to have had any control over the disease.

"All these cases were free from combination with acute disease, with one exception; in this there was inflammation of the arachnoid membrane of the brain, as determined by dissection. This was fatal. Four patients were bled, and all of them recovered. Of the whole number 29, one died.

"The results of the different methods of treatment will be more readily compared, if they are thrown together into a tabular form.

Treatment.	No. Cases.	Bled.	Died.	Recovered.	Complicated with Acute Disease.
Opium large doses,	8	0	4	4	1
" small "	7	1	2	5	1
Emetics, - -	12	1	1	11	2
Bleeding, - -	2	2	0	2	0
Eclectic, - -	9	5	3	6	7
Quinine, -	1	0	0	1	1
Mercurials, -	1	0	0	1	0
Expectant, -	29	4	1	28	1
	69	13	11	58	13

"It appears from this statement that of 15 cases in which opium constituted the principal remedy, 6 died; whilst of 54 in which opium was not used at all, or only incidentally and in small quantities, only 5 died. Still further, if we separate from these 54, the 9 cases in which the treatment was eclectic, and in which the mortality seems to have arisen from the combination of acute disease, we have a remainder of 45 cases, of which only 2 were fatal. Again, if we compare the mortality of those cases in which opium was pushed to the full extent advised by writers on this disease, with those in which no active remedy was employed, we have a mortality of 1 in 2, against a mortality of only 1 in 29.

This difference in the results of treatment would seem altogether too great to be attributed to accident, and goes far to establish the truth of the opinion formerly expressed, that opium given in large doses is actually injurious to patients labouring under delirium tremens. But even admitting it as possible that the great proportion of fatal cases occurring where opium was used, was accidental, it certainly, I think, will not be contended that the favourable termination of the cases not treated by opium, was also owing to accident. And it will certainly

follow that opium, if not absolutely injurious to these patients, is at least useless, and that our success in this disease will be sufficiently satisfactory without it.

"The examination which has been made of these cases has led me to the notice of some other circumstances relating to the history and treatment of delirium tremens, which it may be worth while to record.

"And first, it appears that a case of this disease is not often fatal unless some other affection is present, which is in itself dangerous, and liable, even without its complication with delirium tremens, to prove fatal. Of the 11 fatal cases above recorded, 7 or 8 were of this character. It is not, however, always in our power to be certain of the existence of such a combination, since the effect of the delirium is to absorb or overshadow whatever other affection may co-exist, and thus to obscure its symptoms and prevent us from recognising its presence. It may have been possible, therefore, that in the other fatal cases where no such combination was apparent, it may have existed. But it is still worthy of remark that of the fatal cases occurring among patients who were presumed to be free from any such combination, two, if not three, were of those who were subjected to the full opium practice.

"2. In three of the fatal cases death took place after the patient had slept. We have been taught to rely on the occurrence of sleep as a pretty certain indication of a favourable termination. It would appear, however, that to this indication there are many exceptions. Neither is the occurrence of sleep in favourable cases always followed by a termination of the paroxysm. Eight patients slept more or less during the continuance of the disease; awaking to exhibit all the symptoms which had previously existed.

"3. Convulsions have been considered an unfavourable symptom in delirium tremens; but of 9 patients in whom they occurred, only two were among the fatal cases. I will not assert positively that all the instances in which they took place were noted, yet I do not think they were often omitted. Especially it is probable that they were not overlooked in the fatal cases. Hence, if there be any error, it is one which would diminish rather than increase the ratio of mortality among the cases presenting this symptom.

"4. General blood-letting has been usually regarded as inadmissible in the treatment of delirium tremens, and is, by some, thought highly injurious. Thirteen patients were bled from the arm, at some period in the course of their disease. Of these only two died, and these were both affected by peripneumony. This would seem, at least, to show that bleeding is not a dangerous remedy, since the cases in which it was employed were principally those in which there was a combination of some acute disease with the delirium; in which class of cases, as already observed, very much greater danger exists than in those in which the delirium is uncombined.

Boston, April, 1838.

Laceration of the Iris.—A case of this accident, which is interesting from the almost complete recovery of the eye after severe injury, is related by Dr. E. J. Davenport in the *Boston Med. and Surg. Journal*, (May 30, 1838.)

"Thursday, 28th September, Bartholomew Kearney, a robust Irish labourer, received a violent blow upon the left eye, from a fragment of stone. I saw him soon after the accident, and found, upon examination, an oblique and irregular wound, about four lines in extent, of the inferior and inner part of the cornea; a considerable portion of the inferior and nasal part of the iris, torn from the ciliary ligament, protruded through the wound and hung down upon the eyeball; the anterior and posterior chambers of the eye were filled with fluid blood, so as entirely to conceal from view the pupil and remainder of the iris; the cornea was rendered prominent by the pressure of the contents of the globe, particularly at the wounded part; the ocular conjunctiva was somewhat injected. The patient complained of great pain, which he referred to the eyeball; and vision in this eye was extinct, at least for the time being. To prevent any additional irritation from the exposure of the prolapsed iris to the atmosphere and to the friction of the eyelids, it was removed with forceps and curved scissors. A small quantity of bloody serum escaped at the moment from the anterior chamber, after which the edges of the wound were carefully adjusted, and a compress wet in cold

water was secured upon the eye with a light bandage. Venesection and an active cathartic were prescribed, together with the antiphlogistic diet and regimen proper to the case. From accidental circumstances, the patient was not seen again until Saturday, when he stated that he had in the meantime been visited by an irregular practitioner of medicine in this city, whose treatment consisted in the external use of the extract of belladonna, and the frequent application to the wounded eye of powders of calomel and white sugar, blown into the eye through a quill! The inflammation had now considerably increased, the vessels of the eye tending to form the zonular arrangement around the cornea, indicative of internal and deep-seated ophthalmia. The pain was severe, though not constant, and was referred chiefly to the brow, temple, and cheek-bone; the intolerance of light and lachrymation were moderate. Notwithstanding the high degree of inflammation, absorption of the blood effused in the chambers of the eye had already taken place so far as to allow the superior part of the iris, and a small portion of the dilated pupil, to be seen. The patient reports that he can distinguish the outlines of large objects.

"*Monday.* The process of absorption continues to advance; nearly all the superior half of the iris and pupil is now visible, and the colour of the former is very perceptibly changed from a greyish blue—the natural colour—to a light green. The circumorbital pain has diminished, and the power of vision is improving. Has discontinued the powders, the treatment being confined to the daily exhibition of purgatives and the application of cloths, wet in cold water, on the eye.

"*Wednesday.* Shreds and patches of blood are visible in the pupil, and also red spots scattered upon the surface of the iris; a portion of coagulated blood remains about and below the corneal wound, and at the lower part of the anterior chamber is seen, indistinctly, the accidental pupil, rendered obscure by coagula not yet absorbed.

"*Friday, 9th day.* Scarcely a trace of blood remains in the anterior chamber. *The false or accidental pupil presents the appearance of being a continuation or enlargement of the natural pupil, forming with that a large and irregular aperture, by the separation of nearly one half of the circumference or external margin of the iris from the ciliary ligament. A point of the pupillary margin of the iris, of a triangular shape, has become engaged in and adheres firmly to the opaque cicatrix left by the wound of the cornea. The cicatrix forms a point of attachment for this part of the iris, by which the inferior boundary of the natural pupil is in some measure preserved.* This cicatrix crosses the cornea obliquely just below the axis of vision, and passes through the substance of that tunic.

"*Sunday.* The entire pupil is black and transparent, or nearly so; the iris, however, does not manifest any contraction or dilatation upon exposure to different degrees of light. The patient can now distinguish large print with the injured eye, but still complains of an appearance of a haze or mist. Has not had, at any time, muscæ volitantes, nor luminous spectra. In a few days after this visit he was able to return to his work, guarding the eye with a pasteboard shade.

"*November 12th.* The wound of the cornea has become firmly cicatrized, the cornea retaining its natural size and convexity. The superior half of the iris dilates and contracts moderately well; the inferior portion being attached to the cornea, is of course without motion. By contracting the lids very slightly, vision is equally as perfect as in the sound eye."

Use of the Bark of the Ulmus Fulva for Bougies, Tents, Catheters and similar purposes in Surgery. The *Western Journal of the Medical and Physical Sciences*, January, 1838, contains an interesting article on this subject by Dr. William A. M'Dowell, of Fincastle, Virginia. It seems that Dr. M'D. was led to the use of the slippery elm tents at the suggestion of Dr. John Fleece of Danville, Kentucky, who recommended them to him as more easily introduced, more pleasantly worn, and better adapted to keep an issue or seton open, than any others. These tents, for enlarging fistula, are made by taking a strip of the seasoned inner bark, of sufficient length to reach to the bottom of the sinus, and leave an external portion to be bent down over the skin, by which it may be withdrawn. This strip is made of the requisite thickness,

smoothly polished, rounded at the point, and dipped a few seconds in tepid water, where it becomes covered with mucilage. It may be now introduced into the sinus, and allowed to remain there for 12 hours. It causes no pain, and when withdrawn, the sinus will be found to be considerably enlarged by the expansion of the tent. Another larger tent may then be introduced, and so on until the sinus is sufficiently enlarged.

The catheter of elm bark is thus prepared:

"Take a thin strip of the inner bark, from 1 to 1½ inches wide, seasoned just so much as not to destroy its pliability, level the edges, and smear them with mucilage or glue; wrap the bark either spirally or longitudinally around a stillet, and roll with tape. The wire should be smeared thinly, but completely, with bees-wax and tallow, to prevent its being retained by the glue. A good mechanic could make a nice article of this kind, which for the purpose of being left in the urethra, when a case may require such treatment, proposes great advantage over any other catheter, for when thus left, coated with mucilage, instead of acting as an irritant, it proves a fine emollient to the inflamed or lacerated parts."

Dr. M'Dowell very justly remarks, that

"Some caution is necessary in using bougies or catheters of elm. Although this bark possesses a degree of tenacity surpassed by that of but few trees of the forest, yet when seasoned, and in a very dry state, it would be liable, in the hands of a careless, or awkward operator, to break off in the urethra or bladder. To obviate this danger, it should be immersed in water, for a longer period when it is very dry, which will restore tenacity to its outer fibres."

Case of extraordinary enlargement and ossific transformation of the Ovaria. By E. Geddings, M. D. For the few details I shall be able to furnish, relative to the previous history of the subject of the case, and the origin of the disease, I have been indebted to my friend and colleague, Prof. H. R. Frost, to whose kindness I also owe the interesting opportunity of examining the body after death.

The subject of my remarks was a black woman, aged 60 years, the mother of two children. Her occupation was that of a fieldhand, in which situation she was able to perform her task. Her general health was good, and her principal complaint was occasional pain of the abdomen, sometimes followed by convulsions, which generally yielded to a dose of castor oil. She became pregnant of her second child at the age of twenty years—was delivered safely at the usual time, but had a painful parturition. Shortly after delivery, a swelling was observed in the lower part of the abdomen, which increased so rapidly, that she soon became as large as before her confinement. She continued to menstruate, and had no children afterwards. This circumstance, together with the tumour of the abdomen, induced her to believe that she was *tricked* (bewitched). All attempts to influence the tumour by medical treatment were unavailing, and for some time before death, her abdomen presented the appearance of that of a female in the last stages of pregnancy. She continued to be useful to her owners almost to the last, and finally died suddenly of convulsions.

Necroscopy.—The body presented no appearance of emaciation. The large abdominal tumour was round, hard to the touch, and slightly uneven on the surface. It reached from the pelvis to near the ensiform cartilage of the sternum, and was slightly inclined to the right side. On laying open the abdomen, the tumour was found to occupy the right ovarium. The whole of the anterior part of its circumference adhered so closely to the inner surface of the abdominal parietes, especially at the umbilicus, that considerable difficulty was experienced in separating the attachment. In the right iliac fossa, it was adherent to some of the convolutions of the small intestines, and in its circumference, from right to left, it was firmly united with the ascending, transverse, and descending colon. Behind the line of this latter adhesion, the posterior surface of the tumour, equal to about one half of its extent, was perfectly free and smooth upon the surface—most of the convolutions of the small intestines resting between it and the posterior part of the abdomen.

The tumour was detached from the parts with which it adhered, and removed from the abdomen, with the uterus annexed. It was of an elliptic, or ovoid shape;

somewhat uneven upon the surface; was covered by thickened peritoneum, and upon its anterior part, with the false membranes by which it had been tied to the neighbouring structures. The uterus was healthy, and presented the right fallopian tube extending to the body of the tumour, in which it was lost. The entire weight of the latter was fifteen pounds. In its longest diameter it measured nine inches: the transverse diameter was seven inches and a half: the lateral diameter eight inches. The portion which adhered to the umbilicus was somewhat soft, and presented evidences of fluctuation. When cut into, about eight ounces of curdy matter was discharged. All the rest of the tumour was so hard and resistant, that it could only be divided with a saw. From three to four-fifths of its substance was composed of bone, part of which existed in form of homogeneous solid masses, possessing the ordinary properties of bone, while in other portions, the osseous tissue was deposited in form of plates and spiculæ, united by a firm, tough, fibrous tissue. The ossific transformation was not confined to the external envelope of the organ, but was disseminated through its entire substance, and had supplanted every vestige of its natural structure.

Partial ossific transformation of the ovaria is by no means of rare occurrence; but I know of no instance in which it was as extensive as in the case just detailed. In most of the examples, indeed, that have been reported, it was either confined to the fibrous envelope of the organ, or if it occurred in the proper substance of the ovaria, it was merely in form of small isolated particles. It is proper, nevertheless, to remark, that calcareous deposites of considerable size are occasionally found in the same situation, many of which have doubtless been described by persons not accustomed to make pathological investigations, as examples of ossification of the ovaria.—*Southern Med. and Surg. Journal*, May, 1838.

Reports of Cases treated in the Pennsylvania Hospital. By Henry H. Smith, M.D. —I. *Case of Varicose Vein, cured by means of needles passed through the veins, after the method proposed by Davat.**

George K———, a German, aged 57 years, was admitted into the wards on the 19th of July, 1837, for varicose veins, from which he had suffered for several months. He had had a large ulcer caused by the veins, for which he had been treated in the city by bandages, &c. The ulcer was much reduced in size when he entered, and, after appropriate treatment, healed. On the 12th of August, Dr. Norris introduced two acupuncture needles, one behind the vein, and the other through and through it in a line oblique to its axis, and surrounded both by a figure of eight ligatures. Little pain was caused by the operation; the limb was then elevated in a fracture-box; lead water cloths applied, and the antiphlogistic treatment directed.

August 15th. The patient complains of no pain, little inflammation has occurred; ligature tightened and treatment continued.

August 17th. Slight inflammation at the sutures—same treatment.

August 19th. The needles and ligatures were removed, some inflammation around the part, but none to any distance above or below.

August 24th. Inflammation increased; slight ulceration at the points where the needles entered; a poultice to the part, and antiphlogistic treatment continued.

September 4th. The ulcers have healed; the vein perfectly obstructed; bandages and compress applied along the course of the vein.

September 7th. Allowed to walk about; has slight porriginous eruption; treated accordingly.

September 15th. Vein obliterated entirely; patient walks without feeling any inconvenience from it.

September 17th. Discharged—entirely well.

Within a few weeks the patient was seen, having had no return of his complaint, and continuing constantly at work.

II. *Case of Rupture of the Larynx, from a blow on the Pomum Adami.*—F. N——, aged 45 years, a watchman, whilst attempting to arrest a man in the neighbourhood of the river, on the night of the 19th of October, 1837, was knocked down and struck on the throat by a large piece of coal. He was seen immediately by a physician, who found him nearly strangled, unable to speak, and with constant

* See this Journal for August, 1827, p. 460.

spasm, whenever he attempted to speak or swallow. He was bled freely, and sent to the hospital, eighteen hours after the accident.

October 20th. The throat much swelled, and inflamed externally; fauces slightly reddened; aphonia complete; breathing stertorous; barely able to whisper, and swallows with great difficulty. The cartilages of the larynx are loose and crepitant, the *thyroid* separated and moveable, one on the other. Examination of the larynx causes violent gagging; ordered sixty leeches to the outside of the throat, and warm cloths afterwards, to promote the bleeding. Gruel and tea for diet.

October 21st. Rested well; voice somewhat stronger; less pain in the throat; swallows rather better; ordered the same number of leeches; injection to bowels, and other treatment continued.

October 23d. Voice quite audible, though very hoarse; swallows well; no pain on slight pressure on the larynx; sitting up in bed; has swallowed but little since his admission. Ordered weak broth for diet.

October 24th. Voice gradually returning; ordered blister to the throat, to be followed by a poultice.

October 26th. Walking about; union of cartilages quite firm; voice improving; blister repeated; treatment continued; brown mixture for cough, which troubles him slightly.

October 28th. Voice nearly well, though hoarse; swallows as well as ever; cartilages united entirely.

November 4th. Patient discharged; voice strong; no motion in the cartilages; slight hoarseness.

December 15th. The patient was seen to-day; he is able to attend to his duties; speaks clearly; but is unable to call the hour, without some difficulty; has been free from pain since he was discharged.—*Medical Examiner*, April 25th, 1838.

Organization and Administration of the Medical Schools of the United States.—The following resolutions, adopted by the Medical Convention of Ohio, at their meeting at Columbus in January last, deserve an attentive consideration. That a reform is required in the system of Medical Instruction in this country, is becoming every day more manifest.

The resolutions are the following:

"'1. *Resolved*, That in the opinion of this Convention, the sessions of the different Medical Schools, throughout the Union, are too short, and that they ought to be extended one month, and the students required to stay to the *end* of the term.

"2. *Resolved*, That the number of Professorships is too few, and that ampler provision should be made for teaching Physiology, Pathological Anatomy, Pharmacy, and the Natural History of Medicines, Botany, Comparative Anatomy, Meteorology, Medical Jurisprudence, and Mental Physiology.

"3. *Resolved*, That, if practicable, our Medical Schools should be so organized, as that Students, in their first course, would have their attention chiefly directed upon Special Anatomy, Physiology, Chemistry, Pharmacy, and the other elementary branches; and their second upon Pathological Anatomy, Therapeutics, the practice of Physic, Surgery and Obstetrics.

"4. *Resolved*, That in admitting Candidates to examination for degrees, a stricter examination than is at present shown, should be had to their preliminary education.

"5. *Resolved*, That the practice of graduating young men, before they are 21 years of age, should be abandoned.

"6. *Resolved*, That no Pupil ought to be graduated before the end of four years, from the time he commenced the study of Medicine.

"7. *Resolved*, That if the various schools of the Union were to send representatives to a meeting at some central point, to confer together, many of their existing defects, by a simultaneous, co-operative effort, might be successfully remedied, and that we respectfully recommend such a Convention to be held. Till when it would not be practicable, nor should it be expected, that any single institution will attempt the reforms which are here proposed.

"8. *Resolved*, That the Corresponding Secretary be instructed to send a printed copy of the Proceedings of this Convention, to all the Medical Institutions of

the United States, with a letter, calling the attention of their Professors to these Resolutions.'"

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Appointments and Transfers in the Professorial Corps.—R. D. Mussey, M. D., Professor of Anatomy and Surgery in Dartmouth College, New Hampshire, and of Surgery and Obstetrics in the College of Physicians and Surgeons of the Western District of the State of New York, has been elected to the Surgical chair in the Medical College of Ohio, and will, it is said, accept the appointment.

C. W. Short, M. D., late Professor of Materia Medica and Medical Botany in Transylvania University has resigned, and now fills the chair of Materia Medica and Medical Botany in the Louisville Medical Institute.

L. P. Yandell, M. D., has been transferred from the chair of Materia Medica in the Louisville Medical Institute, to that of Chemistry in the same school.

Dr. David L. Rogers, late of New York, has been appointed, and accepted the Professorship of Surgery in the Medical Department of Geneva College, New York.

N. R. Smith, late Professor of Surgery in the University of Maryland, will occupy, the ensuing winter, the chair of the Practice of Medicine in Transylvania University.

Aug. L. Warner, M. D., late Professor of Anatomy and Surgery in the University of Virginia, is now Professor of Surgery in the Medical College of Richmond, Virginia.

Thomas Johnson, M. D., formerly Professor of Anatomy in the University of Virginia, has been appointed Professor of Anatomy and Physiology in the Medical College of Virginia.

Th. D. Mitchell, late Professor of Chemistry in the Medical College of Ohio, has accepted the Professorship of Materia Medica and Therapeutics in the Medical Department of Transylvania University.

Martyn Payne, M. D., has accepted the Professorship of Theory and Practice of Medicine in the Medical Department of the University of New York.

——— Washington, M., D. has been appointed Professor of Clinical Medicine in the Medical Department of the University of New York.

C. A. Lee, M. D., has been appointed Professor of Materia Medica in the same Institution.

A. C. Post, M. D., has been appointed Professor of Clinical Surgery in the same Institution.

N. R. Smith has been elected Professor of the Institutes of Surgery in the same school; but has declined the appointment.

Valentine Mott, M. D., has been elected to the Professorship of Operative Surgery, and J. C. Warren, M. D., to that of Anatomy in the same school; but their acceptance of the appointments is considered doubtful.

John Cullen, M. D., has been appointed Professor of Theory and Practice of Medicine; L. W. Chamberlayne, M. D., Professor of Materia Medica and Therapeutics; R. L. Bohannan, M. D., Professor of Obstetrics and Diseases of Women and Children; and Socrates Maupin, M. D., Professor of Chemistry and Pharmacy in the Medical College of Richmond, Virginia.

Ebnezer Emmons, M. D., has been appointed Professor of Chemistry and Natural History; James H. Armsby, M. D., Professor of Anatomy and Physiology; David M. Reese, M. D., Professor of the Theory and Practice of Medicine; Alden March, M. D., Professor of Surgery; Henry Green, M. D., Professor of Obstetrics; David M. M'Lachlan, M. D., Professor of Materia Medica and Pharmacy; Thomas Hun, M. D., Professor of the Institutes of Medicine; and Amos Dean, Esq., Professor of Medical Jurisprudence in the Albany Medical College.

Connecticut Medical Society.—At the Annual Convention of the President and Fellows of this Society held at New Haven, May 9th, 1838, the following officers were elected for the ensuing year, viz:—Silas Fuller, M. D., President; Elijah Middlebrook, M. D., Vice-President; Luther Ticknor, M. D., Treasurer; Archibald Welch, M. D., Secretary.

University of Pennsylvania.—The number of the medical class in this school the past session was 380.

Bennett's Translation of Kramer on the Nature and Treatment of Diseases of the Ear.—This is the best work on the subject of which it treats, with which we are acquainted. It has been published by Thomas, Cowperthwait & Co., No. 253 Market street. We purpose introducing it more particularly to our readers at an early period.

Lithotripsy.—Dr. Randolph has performed this successfully, on a boy 13 years of age, in the Pennsylvania Hospital. This patient was cut by Dr. Randolph for stone eleven years previously, when the stone was removed entire.

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QUARTERLY MEDICAL ADVERTISER.

MEDICAL DEPARTMENT

OF THE

CINCINNATI COLLEGE.

The session commences the last Monday of October, and terminates the last Saturday in February. During the session six lectures will be delivered daily. By a late regulation of the Faculty, four lectures will be delivered daily by the Professors during the period of examination of candidates for degrees, which will, *under no circumstances*, commence until the regular session shall have expired.

Special and Surgical Anatomy,	By Joseph N. M'Dowell, D. D.
General and Pathological Anatomy, and Physiology.	By Samuel D. Gross, M. D.
Surgery,	By Willard Parker, M. D.
Obstetrics, and the Diseases peculiar to Women and Children,	By Landon C. Rives, M. D.
Chemistry and Medical Jurisprudence,	By Joseph B. Rogers, M. D.
Materia Medica and Pharmacy,	By John P. Harrison, M. D.
Theory and Practice of Medicine,	By Daniel Drake, M. D.
Dissertations and Practical Anatomy,	By Carey A. Trimble, M. D.
Clinical Instruction, in the Cincinnati Hospital,	By Doctors Drake, Parker and Rives.

Dr. Trimble will open the rooms for Practical Anatomy on the 1st of October; and Professor M'Dowell will commence, at the same time, a preliminary course of lectures on Osteology.

Expenses.—Tickets of the Professors $15 each. Matriculation fee $2. Library ticket (which may be taken or omitted, at the option of the student,) $3. Hospital ticket $5. Ticket to the Anatomical rooms $10. (The two latter are required to be taken one session only.) Total $125.

Respectable boarding and lodging can be had for $3 per week.

Candidates are required to *study three years* under some respectable physician, to attend two full courses of lectures, one of which must be in this school; or, to *have practised medicine four years*, and to attend one full course in this school, before they will be admitted to an examination.

In the present deranged state of the currency, the Faculty deem it proper to announce that they will receive from students, in payment of their fees, notes of reputable banks belonging to the states in which they respectively reside.

By order of the Faculty.

1t LANDON C. RIVES, *Dean.*

WASHINGTON MEDICAL COLLEGE

OF BALTIMORE.

The regular lectures in this institution will commence on the last Monday of October, and be continued until the first of March.

The faculty consist of the following Professors in the order of their appointment.

James H. Miller, M. D.,	*Prof. of Anatomy and Physiology.*
Samuel K. Jennings, M. D.,	*Prof. of Materia Medica, Therapeutics and Legal Medicine.*
William W. Handy, M. D.,	*Prof. of Obstetrics and Diseases of Women and Children.*
John C. S. Monkur, M. D.,	*Prof. of Inst. and Practice of Medicine.*
Edward Foreman, M. D.,	*Prof. of Chemistry.*
John R. W. Dunbar, M. D.,	*Prof. of Surgery and Surgical Anatomy.*
S. K. Jennings, M. D.,	*Dean.*
W. R. Handy, M. D.,	*Demonstrator in Anatomy.*

The college edifice, located in a delightful part of the city, is constructed upon a plan as yet (it is believed) untried in this country; presenting the novel attraction of combining in itself a Marine and City Hospital, as well as furnishing arrangements for rooms and board sufficiently extensive to accommodate a large number of resident students.

Clinical lectures are delivered during the winter, on medicine and surgery, by the Professors of the respective chairs.

Resident students who prefer it, may derive all the advantages of attendance upon the sick in the Hospital during the entire year.

Additional information in reference to the plan of the school may be obtained by addresses to

S. K. JENNINGS, M. D.

1t *Dean of the Faculty.*

JEFFERSON MEDICAL COLLEGE

OF PHILADELPHIA.

The regular course of lectures will commence on the first Monday in November.

Surgery,	By George M'Clellan, M. D.
Chemistry,	By Jacob Green, M. D.
Materia Medica and Pharmacy,	By Samuel Colhoun, M. D.
Midwifery and Diseases of Women and Children,	By Samuel M'Clellan, M. D.
Anatomy,	By Granville S. Pattison, M. D.
Principles and Practice of Physic,	By John Revere, M. D.
Institutes of Medicine and Medical Jurisprudence,	By Robley Dunglison, M. D.

Medical and Surgical Clinics of the attending Physicians and Surgeons of the Philadelphia Hospital (Blockley), the Pennsylvania Hospital, and the Dispensary of the College.

DANIEL COLHOUN, M. D.
Dean of the Faculty.

MEDICAL COLLEGE

IN RICHMOND, VIRGINIA.

The Winter term of Lectures in this institution will commence on Monday, November 5th, 1838, and continue until the last week in March.

Augustus L. Warner, M. D., (late Professor of Anatomy and Surgery in the University of Virginia,) *Professor of Surgery.*

Th. Johnson, M. D., (formerly Professor of Anatomy in the University of Virginia,) *Professor of Anatomy and Physiology.*

John Cullen, M. D., *Professor of Theory and Practice of Medicine.*

R. L. Bohannan, M. D., *Professor of Obstetrics and Diseases of Women and Children.*

L. W. Chamberlayne, M. D., *Professor of Materia Medica and Therapeutics.*

Socrates Maupin, M. D., *Professor of Chemistry and Pharmacy.*

The facilities furnished by this city for Clinical and Anatomical instruc-

tion, are not surpassed, if equalled, in our country; so that while the *student* is becoming familiarized with the diseases incident to a Southern climate, he is enabled to acquire a thorough knowledge of the anatomy of the human body, the art of modelling and making anatomical preparations, and the use of surgical instruments, by practising upon the *dead subject.* In addition to the College Hospital, which is under the same roof with the College buildings, (to which the student will have free access,) he may also avail himself of the practice of the City Hospital, Penitentiary and Armory, which are under the charge of one of the Professors. Candidates for graduation will be required to attend *one* full course of Lectures in this institution, having previously studied medicine for two years.

The total expense, including Professors' fees, boarding, fuel, &c., will be very considerably less than in any Northern city.

AUGUSTUS L. WARNER, M. D.,
Dean of the Faculty.

Richmond, June 18*th*, 1838.—1t

CARPENTER'S
CHEMICAL WAREHOUSE,
PHILADELPHIA.

GEO. W. CARPENTER'S

Compound Fluid Extract of Rhubarb, Senna, Manna, Butternut, &c.

WITH AROMATICS AND CARMINATIVES.

It has long been a desideratum with practitioners of medicine as well as the suffering invalid, to obtain a cathartic medicine of uniform strength, which, while it is efficient as a purgative, produces at the same time, none of the unpleasant symptoms of sickness at the stomach and lassitude of the system, which most cathartics do of the drastic kind, and especially while destitute of the nausea and unpleasant effects thus produced, has the advantage of being pleasant to the taste and agreeable to the stomach.

The liquid form, such as infusions, tinctures, syrups, or decoctions are invariably preferred on account of a more speedy action, by being more immediately exposed to the decomposing process of the stomach and its instantaneous union with the gastric fluid, notwithstanding all this they are seldom used in consequence of the trouble and difficulty in preparing them, which requires twelve to fifteen hours, and some of them as many days. Hence they are generally used in substance either in powder or pills; these are objectionable on several accounts, many of the crude articles, such as Rhubarb, Jalap, &c. &c., are very uncertain in this state, because inferior roots, such as will not sell in the crude state, are pulverized and not unfrequently adulterated, and even if used fresh they are frequently injured in the process of powdering, in which heat is always more or less used for the more speedy disintegration of the substance and for the increased facility given to the operation of pulverizing, the operator too, generally being unacquainted with the changeable properties of bodies acted upon very dif-

ferently by heat and other processes of pulverization; his process operates generally in an equal degree upon each, or varying merely for the purpose of expediting the process, by all which the physician is subjected to disappointment, and the patient undergoes a prolongation of pain and suffering.

In the above extract the crude materials are all carefully selected, fresh, and of the choicest quality, and prepared upon chemical principles, so as to extract the purgative properties of the crude materials and separate them from the ligneous and inert matter, in which state it is calculated to act with more certainty and not to irritate or disorder the stomach. Any person can use this cathartic with perfect safety, as it is prepared from the mildest vegetables of the cathartic class, and at the same time, so concentrated as to be an active purgative, without any of the drastic or irritating effects which most of the purgatives have. It can be given to females or infants with entire safety.

In the various compound preparations and fluid extracts which I have made, I have used the name of the medicine from which they were extracted, so as to admit no disguise about them, and to exclude them from every thing like nostrums, as Extract of Buchu, Extract of Liverwort, Extract of Pink Root, &c. &c., and so in the present case, but no sooner than they are announced, a host of imitators are at work, who get the same size and shape of bottles which I use, alter the direction and description of them a little, so as not to be quite verbatim but nearly so, and put them up exactly in the same style and appearance to a minutia, and then throw out my name and insert their own, for what object I leave the public to judge: hence you find any body's Extract of Buchu, &c. &c., sold on the reputation which mine has acquired, and which no doubt will be the consequence with this Extract; I therefore beg leave to caution the physicians and the public from these imitations, and hope such apish propensities will not be encouraged, and to inform them that my preparation swill always have my written name on the label immediately on the bottle. I do this as a protection for my just rights, for if there are those who have not industry or talent to invent or introduce any thing themselves, I am not disposed to suffer them surreptitiously to seize upon my labour for their profit or advantage; and I hope, under such circumstances, the public will not encourage any of the imitators of my various preparations, which have been for several years before the public and well known to every practitioner of medicine.

The intimate connection existing between the whole of the alimentary canal, and other portions of the complicated structure of the human body, gives to Cathartics or Purgatives an extensive influence, and render them among the most important means in the practice of our profession. The primary and most obvious effects of Cathartics is an evacuation of the bowels. These are liable to various accumulations of a morbid nature, which remaining, disturb health, and frequently excite or confirm disease. Cathartics, in relieving the bowels under such circumstances, extend also their operations upwards, and bring down, in many instances, the contents of the stomach. Our distinguished Professor, Dr. Chapman, says, that the strong impression which they impart to the liver and pancreas, excites these glands to invigorated efforts, and the result is a vast increase of their respective secretions. It is in this way that congestions, especially in the portal circulation, are removed, biliary calculi dislodged, and jaundice and other affections from organic obstruction cured.

Cathartics have, moreover, a wider operation, in which the circulatory system is embraced, and, as a leading effect, arterial action greatly diminished. This they effect by stimulating the exhalent vessels on the surface of the intestines, and the very copious effusions which take place, are so much detracted from the circulating mass. Cathartics on another principle, conduce to the reduction of the pulse. It is a law of the circulation, sufficiently admitted, that, if depletion be made from any one set of vessels, the current of circulation will be directed to these, and, of course, the blood diminished in other parts. Cathartics occasion this revulsion, and hence their utility in some of the diseases of the skin, of the head, and of the great viscera, dependent on undue determinations of blood. While cathartics

are undoubtedly stimulant on the stomach and bowels, all their remoter and more permanent consequences are unequivocally sedative and abating the vigour of the circulation, and lessening general excitement. Medicine, so pervading in their effects, must be calculated to meet a variety of indications.

In short, there is scarcely a disease which affects the human system, in which cathartics, in some stage of it, are not applicable, and in most diseases, is the first remedy resorted to.

This extract can be used with advantage in most cases where a cathartic is required, and will be found particularly useful in cases of indigestion and habitual costiveness, on account of its unirritating effects.

It is unnecessary to state the various diseases in which this cathartic is applicable, as it would be necessary to enumerate almost the entire catalogue.

The dose of this extract is a tablespoonful, to be repeated in three or four hours, if the effect is not produced, or where a brisk cathartic is wanted a wineglassful may be taken at once. The dose for children to be proportioned according to age. It should be given on an empty stomach, and early in the morning, or at bed time; by this means we prevent its being rejected, and secure a more easy and effectual operation.

By mixing a couple of teaspoonsful of this extract in a Seidlitz powder an agreeable and active cathartic is produced.

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Begs leave to inform the Faculty that he has made arrangements to supply the following preparations at the prices annexed, and those who wish either of them can simply denominate them according to the numbers affixed, by which each preparation will be known. They are prepared in the most neat, durable, and scientific manner, and are calculated to give satisfaction to the most scrutinizing surgeon or anatomist.

No. 1—Are preparations of the adult subject, muscular, nervous and arterial, with the heart in situ, and the large venous trunks injected; also with the diaphragm, the stomach, duodenum and commencement of the jejunum inflated, the gall-bladder and ducts, the spleen and pancreas, and all the ramifications of the cœliac axis exhibited, the mesenteric and spermatic arteries, the kidnies, the ureters and bladder inflated, the rectum and sigmoid flexure of the colon, the penis injected, (or the uterus of the female) the fasciæ of the abdomen and thigh, and the anatomy of inguinal and crural hernia, the lymphatic glands concerned in surgery, the fascia of the neck and of the axilla of one side, also the submaxillary gland, the parotid injected from the duct of Steno, and the portio dura of the seventh pair of nerves; on the other side of the head, the glands removed, and the side of the lower jaw, so as to exhibit the ramifications of the internal maxillary artery and of the deep seated nerves, one side of the cranium and the brain removed, the processes of the dura mater and all the trunks of the cerebral arteries shown, also the ramifications of the ophthalmic artery and nerves seen from within the cranium by removing the orbital plate of the frontal bone,—$150.00.

No. 2—Are preparations of small subjects from one to four years of age, muscular, nervous and arterial, exhibiting all the viscera mentioned in No. 1, and nearly all the points of surgical anatomy.—$40.00 to 60.00.

No. 3—Are preparations of the superior extremity with half the head and thorax, muscular, nervous and arterial, with or without the heart in situ, exhibiting besides the external anatomy, that of the nose, fauces, œsophagus, larynx, trachea, &c., frontal and sphenoidal sinuses, and the origin of the spinal nerves.—$25 to 30.00.

No. 4—The same without the head.—20.00.

No. 5—Are preparations of the lower extremity and half the pelvis, muscular, nervous and arterial, exhibiting the anatomy of Inguinal and crural hernia, with or without the pelvic viscera.—$20.00.

This preparation with No. 3 forms a complete and very valuable system of surgical anatomy.

The veins will also be exhibited in any of the above preparations if it is desired, with an addition of one-fifth to the price.

Much care is taken to render these preparations useful to the surgeon by bringing all the parts into view, both superficial and deep seated, without destroying anything, or removing it further than necessary from its natural situation.

Each preparation is accompanied with a descriptive catalogue of references, by which all the important preparations are explained by numbers affixed to them, corresponding with numbers on the Catalogue, which renders the subject much more interesting and increases its importance and value to the student of medicine.

Skeletons unwired, $10 to 20.00.

Skeletons wired, superior quality, French, $45.00.

Obstetrical Models, with Manakin complete, $45.00.

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FAMILY MEDICINE CHEST DISPENSATORY.

Containing a select Catalogue of Drugs, Chemicals, and Family Medicines, with the properties and doses of each article most approved of in Domestic Medicines; to which is appended, a concise description of Diseases, with directions for the treatment of such as are unattended with serious consequences; shewing also the best immediate measures to be adopted in those disorders and accidents which are destructive to life, when the physician is not at hand, or until his assistance can be procured.

BY GEORGE W. CARPENTER, PHILADELPHIA.

This work will be found useful to Planters, who have a large number of domestics, and to heads of families, particularly those residing in the country. It is approved of by the faculty, and contains nothing but what is supported by the highest medical authority. The following notice is from the distinguished editor of the Pennsylvania Inquirer, of this city:

"*Carpenter's Family Dispensatory.*—Mr. G. W. Carpenter, chemist and druggist, No. 301 Market street, has just published a very valuable work with the above title. It contains a select catalogue of drugs, chemicals, and family medicines, with the doses and properties of each article, adapted and proportioned to the various ages of life,—also directions for the treatment of accidents and disorders destructive to life; showing also the best immediate measures to be adopted when a physician is not at hand, or until his assistance can be procured. Also, a concise description of all the celebrated mineral springs of Great Britain and the United States, with observations on the various kinds of baths and bathing. In our view, a more useful work for families, and especially for persons who reside in the country, at a distance from the residence of a physician, has not been pub-

lished for many years. The author of the work states in the preface, that in preparing and compiling it, he availed himself of the assistance of a medical gentleman of this city, to whom he acknowledges his indebtedness for that portion of the work which treats of diseases and the various applications and remedies. We confidently commend this Dispensatory to public attention."

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The following new and valuable preparations are highly approved of, and extensively used wherever they have been introduced.

Carpenter's Compound Fluid Extract of Sarsaparilla—for extemporaneously making the Lisbon Diet Drink. One table-spoonful is equal in strength to 1 lb. Compound Syrup of Sarsaparilla, or a bottle of panacea.—Price $9 00 per doz.

Carpenter's Compound Fluid Extract of Buchu—(Diosma Crenata) a valuable medicine for diseases of the bladder, chronic gonorrhea, &c.—Price $15 00 per doz.

Carpenter's Compound Syrup of Liverwort—(Hepatica Triloba) a safe and valuable medicine in hepatic and pulmonary affections.—Price $6 00 per doz.

Carpenter's Oil of Cantharidin—for producing speedy and certain vesication, by simply rubbing the part.—Price $6 00 per doz.

Carpenter's Oil of Sinapine—a most valuable rubefacient, and acts instantaneously on its application.—Price $6 00 per doz.

Carpenter's Citrated Kali—for extemporaneously making the saline draught, or neutral mixture.—Price $4 00 per doz.

Carpenter's Saratoga Powders—for making Congress Spring or Saratoga Water, equal to that fresh from the spring.—Price $4 50 per doz.

CAUTION.—The reputation of my Saratoga Powders has induced numerous imitations, which have been sold on the character of my preparation, Physicians who wish the genuine article will please write their orders, "Carpenter's Saratoga Powders," or they may get the spurious compound.

G. W. CARPENTER.

Carpenter's Chalybeate Ginger Powders,—a valuable remedy in dyspepsia and indigestion.—Price $4 00 per doz.

Carpenter's Precipitated Extract of Bark,—fully equal to Quinine in the same doses, at one-third the price.—Price $1 00 per ounce.

Carpenter's Compound of Sarsaparilla, Cubebs and Copaiva,—the most valuable and effectual remedy yet discovered in gonorrhea, gleets, &c.—Price $9 00 per doz.

Carpenter's Compound Fluid Extract of Pink Root, (Spigelia Marilandica)—the most safe and efficient vermifuge yet discovered.—Price $6 00 per doz.; small size $2 00.

Carpenter's Tonic Extract,—composed of quinine, cinchonine, piperine, capsicine, and a much more active preparation than quinine in intermittents.—Price $4 00 per doz.

Oil of Copaiva.—Price $2 50 per doz.

Oil of Cubebs.—Price $3 50 per doz.

Carpenter's Compound Extract of Boneset, (Eupatorium Perfoliatum,) —a very valuable febrifuge. The valuable properties of the eupatorium are known to every practitioner of medicine.—Price $9 00 per doz.

Carpenter's Solidified Copaiva, neatly put up in jars of various sizes from 1 to 4 oz. with directions, &c. at $1 50 per lb. and no charge for the jars.

Carpenter's Compound Cerate of Copaiva, a valuable application in burns, scalds, wounds, ulcerations and sores of every kind; neatly put up in glass jars with directions at $4 00 per doz.

Carpenter's Solution of Kreosot, for the cure of Cancerous Ulcers, old sores, tetters, ring worms, and will immediately stop bleeding from fresh wounds, bleeding at the nose, &c. &c.—Price $7 50 per doz.

Conservative Water, for the prevention and removal of venereal contamination, and a valuable wash for venereal ulcers, and sores of various kinds. —Price $12 00 per doz.

Carpenter's Mild Cathartic Pills.—These pills will act without producing nausea, or any unpleasant sensation whatever, being as mild as Rochelle salts and at the same time active and of certain effect. They are a valuable article for the dyspeptic, and those of costive habits.—Price $1 50 per dozen boxes.

Carpenter's superfine prepared Flour of the Slippery Elm, a valuable medicine in inflammation of the mucous membrane, such as colds, influenza, dysentery, and inflammation of the stomach and bowels; also, a pleasant and salutary diet in consumption. It is neatly put up in convenient packages.—Price $1 50 per doz.

Superfine Red Bark, powdered from a true cinchona oblongifolia, and neatly put up in lbj. and ℥j. cylindrical sealed packages.—Price $2 per lb.

Superior Calisaya Bark, this is a species of yellow bark which yields the quinine, in greatest quantity, and the only kind from which quinine can be advantageously made; is carefully powdered and neatly put up in lbj. and ℥j. sealed cylindrical packages, at $1 50 per lb.

Superior Loxa or Crown Bark.—This bark is milder than the Calisaya or Red, and is better adapted for a weak and debilitated stomach than the stronger barks; this bark has been selected in Spain for the Royal Family, hence the name of Crown Bark. It is put up like the former: price $1 25 per lb.

Lima Bark.—Under this name various kinds of bark of good quality has been sold, a very good article will be put up like the preceding variety in neat sealed packages at 75 cents per lb.

Citric Acid, or crystallized Lemon Juice.—ʒj. of this acid dissolved in two-ounces water will instantly make a solution equal in every respect to a like quantity of fresh lemon juice; to the physician in the country this article will be very desirable.—Price 31 cts per oz.

Oil of Black Pepper, this article is a valuable adjunct to quinine and is much more active than piperine, it is put up in vials with directions.—Price $4 50 per doz.

Black Oxyde of Mercury, for extemporaneously making the Blue Pill, with directions.—Price $5 00 per doz.

True Socotrine Aloes, that which is generally sold for Socrotine is Cape Aloes. The above is the true article and is decidedly superior to any other variety.—Price 50 cents per lb.

Bedford Spring Powders, for making the chalybeate cathartic waters of the celebrated Bedford Springs in Pennsylvania.—Price $4 00 per doz.

Latin Labels, for the use of Druggists and Physicians in books containing a complete set, printed neatly on coloured paper.—Price $3 00.

Liquid Chloride of Soda, one of the most powerful disinfecting agents, put up in quart bottles with directions.—Price $6 00 per doz.

Specimens of the Materia Medica, neatly put up in Cabinet form with explanatory catalogue for the use of medical students.—Price $10 00 per case.

George W. Carpenter's Compound Extract of Iceland Moss, Carrageen, Slippery Elm, Horehound, &c.—A valuable remedy in Colds, Coughs, Dyspepsia, Dysentery, and affections of the breast and lungs.—Price $6 00 per doz.

George W. Carpenter's Compound Fluid Extract of Dulcamara, or Bitter Sweet, an effectual remedy in all cutaneous diseases, particularly *scaly eruptions of the skin, pimples or blotches on the face, biles, tetter, ring-worms, &c. &c.*—Price $8 00 per doz.

Gum Elastic Enema Syringes,—$9 to $12 per doz.
do. do. Penis do. $6 00.
do. do. Breast Pumps, $9 00 per doz.

Druggists will be supplied with Skeletons, from $75 to $120 per dozen; and all the various arterial and venous preparations, so as to afford them a profit.

Heintzelman's Nipple Shield.—$4 50 per doz.

Heintzelman's Nursing Tubes complete with bottle attached.—$9 00 per doz.

The subscriber having purchased from Dr. Heintzelman, the patent right of the above, is *alone* authorized to make and vend them.

The subscriber having made arrangements with several of the vaccine physicians of this city, can supply Druggists and Physicians with the genuine virus, warranted fresh, at $2 50 singly, or $24 00 per doz.

Carpenter's Materia Medica, comprising a full account of all the new and proximate principles, and the popular medicines lately introduced in practice, detailing the Formulas for their preparation, their habitudes and peculiarities, doses, and modes of administration, with remarks on the most eligible form of their exhibition: to which is added a Catalogue of medicines, surgical instruments, &c. &c. adapted for a physician at the outset of his practice, with the doses and effects attached to each medicine, &c.—Price $2 00.

A large assortment of Surgical Instruments of every description, of superior quality and at very low prices.

GEO. W. CARPENTER.

CAUTION TO PHYSICIANS.

I must beg leave to call the attention of my medical friends, and the faculty in general, who wish to get my preparations, and who do not send their orders direct to my establishment, to be particular in their orders to name George W. Carpenter's preparations. I urge this in consequence of several attempts having been made to imitate my preparations by the ignorant and inexperienced, which although futile, still are troublesome, in consequence of deceiving people before they are acquainted with the circumstances.

After the reputation of any valuable medicine is established, with considerable expense, trouble, and many experiments by the proprietor, he should receive the benefit of his improvement or discovery as long as he continues to prepare the article in a satisfactory manner, and gives his attention to it and to his business. He is sometimes, however, annoyed by the spurious imitation of his preparations, made by the ignorant and careless, who have not genius or industry to invent or discover any thing, or to make any improvement of their own; but whenever they see any thing established, and like to become popular, will stoop to imitate the name and embezzle the reputation of it and appropriate it to themselves. These are a class of people who should receive no countenance or support from the faculty, or the community; but their meanness should receive its just reproach and indignation. They prepare inferior, and frequently entirely different compounds, a kind of hodge-podge composition, which they sell under the same name and on the reputation of the genuine medicine, copying and pilfering the directions, putting them up in the same bottles and form, thus frequently deceiving the public, and injuring the character and reputation of valuable medicines. Under these circumstances I hope the faculty will indulge me with these remarks, and will see the necessity, when they wish to procure my preparations, to order them prepared by me; and, to guarantee their genuineness, each bottle will have my written signature or the following caution attached to the envelope.

CAUTION.

The subscriber regrets the necessity of *cautioning* the public against the spurious *imitations* of all his preparations; as soon as he introduces a new article, the name and directions are copied almost verbatim, and a spurious article in imitation is imposed upon the public as the same—they are put up in the same form and external appearance, but differing essentially in their constituent principles, and sold on the reputation which my articles have acquired. These *apish propensities* we hope an enlightened public will not